This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

A propos de ce livre

Ceci est une copie numérique d'un ouvrage conservé depuis des générations dans les rayonnages d'une bibliothèque avant d'être numérisé avec précaution par Google dans le cadre d'un projet visant à permettre aux internautes de découvrir l'ensemble du patrimoine littéraire mondial en ligne.

Ce livre étant relativement ancien, il n'est plus protégé par la loi sur les droits d'auteur et appartient à présent au domaine public. L'expression "appartenir au domaine public" signifie que le livre en question n'a jamais été soumis aux droits d'auteur ou que ses droits légaux sont arrivés à expiration. Les conditions requises pour qu'un livre tombe dans le domaine public peuvent varier d'un pays à l'autre. Les livres libres de droit sont autant de liens avec le passé. Ils sont les témoins de la richesse de notre histoire, de notre patrimoine culturel et de la connaissance humaine et sont trop souvent difficilement accessibles au public.

Les notes de bas de page et autres annotations en marge du texte présentes dans le volume original sont reprises dans ce fichier, comme un souvenir du long chemin parcouru par l'ouvrage depuis la maison d'édition en passant par la bibliothèque pour finalement se retrouver entre vos mains.

Consignes d'utilisation

Google est fier de travailler en partenariat avec des bibliothèques à la numérisation des ouvrages appartenant au domaine public et de les rendre ainsi accessibles à tous. Ces livres sont en effet la propriété de tous et de toutes et nous sommes tout simplement les gardiens de ce patrimoine. Il s'agit toutefois d'un projet coûteux. Par conséquent et en vue de poursuivre la diffusion de ces ressources inépuisables, nous avons pris les dispositions nécessaires afin de prévenir les éventuels abus auxquels pourraient se livrer des sites marchands tiers, notamment en instaurant des contraintes techniques relatives aux requêtes automatisées.

Nous vous demandons également de:

+ *Ne pas utiliser les fichiers à des fins commerciales* Nous avons conçu le programme Google Recherche de Livres à l'usage des particuliers. Nous vous demandons donc d'utiliser uniquement ces fichiers à des fins personnelles. Ils ne sauraient en effet être employés dans un quelconque but commercial.

+ *Ne pas procéder à des requêtes automatisées* N'envoyez aucune requête automatisée quelle qu'elle soit au système Google. Si vous effectuez des recherches concernant les logiciels de traduction, la reconnaissance optique de caractères ou tout autre domaine nécessitant de disposer d'importantes quantités de texte, n'hésitez pas à nous contacter. Nous encourageons pour la réalisation de ce type de travaux l'utilisation des ouvrages et documents appartenant au domaine public et serions heureux de vous être utile.

+ *Ne pas supprimer l'attribution* Le filigrane Google contenu dans chaque fichier est indispensable pour informer les internautes de notre projet et leur permettre d'accéder à davantage de documents par l'intermédiaire du Programme Google Recherche de Livres. Ne le supprimez en aucun cas.

+ *Rester dans la légalité* Quelle que soit l'utilisation que vous comptez faire des fichiers, n'oubliez pas qu'il est de votre responsabilité de veiller à respecter la loi. Si un ouvrage appartient au domaine public américain, n'en déduisez pas pour autant qu'il en va de même dans les autres pays. La durée légale des droits d'auteur d'un livre varie d'un pays à l'autre. Nous ne sommes donc pas en mesure de répertorier les ouvrages dont l'utilisation est autorisée et ceux dont elle ne l'est pas. Ne croyez pas que le simple fait d'afficher un livre sur Google Recherche de Livres signifie que celui-ci peut être utilisé de quelque façon que ce soit dans le monde entier. La condamnation à laquelle vous vous exposeriez en cas de violation des droits d'auteur peut être sévère.

À propos du service Google Recherche de Livres

En favorisant la recherche et l'accès à un nombre croissant de livres disponibles dans de nombreuses langues, dont le français, Google souhaite contribuer à promouvoir la diversité culturelle grâce à Google Recherche de Livres. En effet, le Programme Google Recherche de Livres permet aux internautes de découvrir le patrimoine littéraire mondial, tout en aidant les auteurs et les éditeurs à élargir leur public. Vous pouvez effectuer des recherches en ligne dans le texte intégral de cet ouvrage à l'adresse `http://books.google.com`

CHEM
7108
77

HARVARD COLLEGE LIBRARY

BOUGHT FROM THE INCOME OF THE FUND
BEQUEATHED BY
PETER PAUL FRANCIS DEGRAND
(1787-1855)
OF BOSTON

FOR FRENCH WORKS AND PERIODICALS ON THE EXACT SCIENCES
AND ON CHEMISTRY, ASTRONOMY AND OTHER SCIENCES
APPLIED TO THE ARTS AND TO NAVIGATION

SCIENCE CENTER LIBRARY

PRÉCIS

DE

CHIMIE INDUSTRIELLE

PLANCHES

17489 — PARIS, TYPOGRAPHIE LAHURE,
9, Rue de Fleurus, 9

PRÉCIS

DE

CHIMIE INDUSTRIELLE

A L'USAGE

1° DES ÉCOLES D'ARTS ET MANUFACTURES ET D'ARTS ET MÉTIERS
2° DES ÉCOLES PRÉPARATOIRES AUX PROFESSIONS INDUSTRIELLES
3° DES FABRICANTS ET DES AGRICULTEURS

PAR

A. PAYEN

Membre de l'Institut (Académie des Sciences)
Professeur au Conservatoire des Arts et Métiers et à l'École centrale
des Arts et Manufactures

SIXIÈME ÉDITION

REVUE ET MISE AU COURANT DES DERNIÈRES DÉCOUVERTES SCIENTIFIQUES

PAR

CAMILLE VINCENT

INGÉNIEUR

Chargé du Cours de chimie industrielle à l'École centrale des Arts et Manufactures

PLANCHES

PARIS

LIBRAIRIE HACHETTE ET Cie

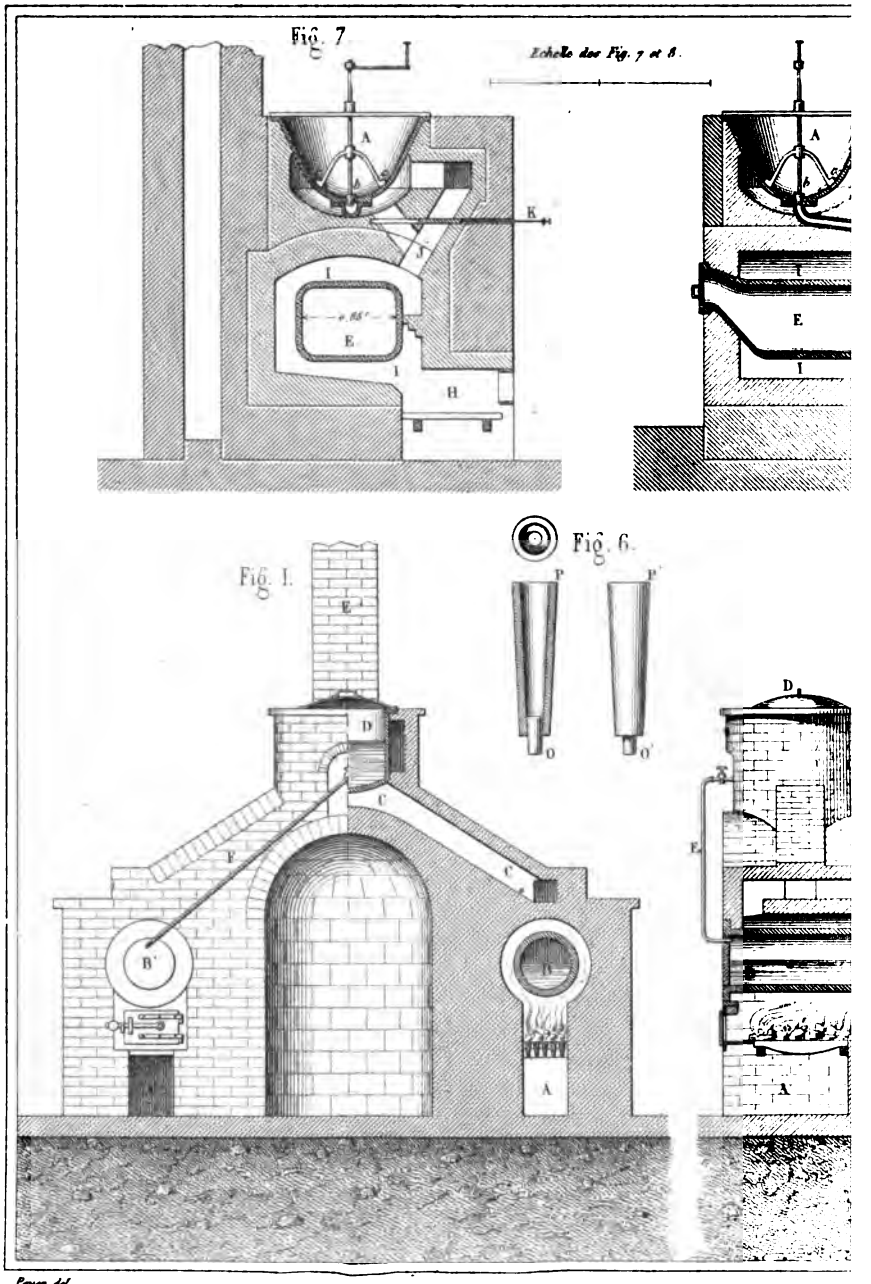
79, BOULEVARD SAINT-GERMAIN, 79

1878

Chem 7108.77

HARVARD COLLEGE
FEB 15 1921
LIBRARY

Degrand fund



Pagen del. Librairie

Fig. 8.

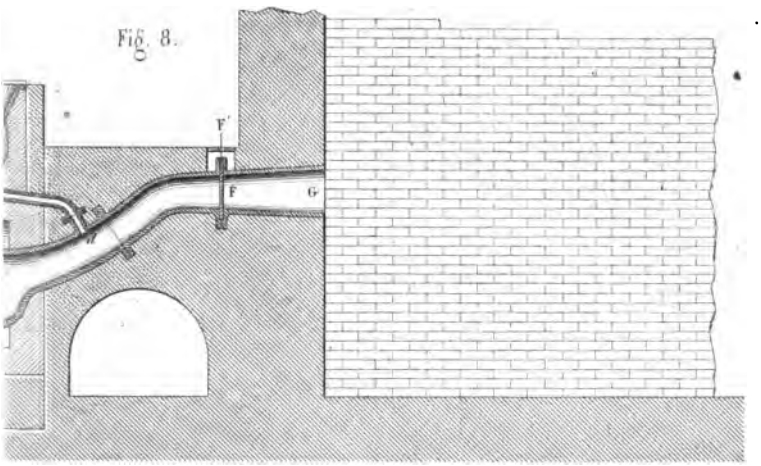


Fig. 2.

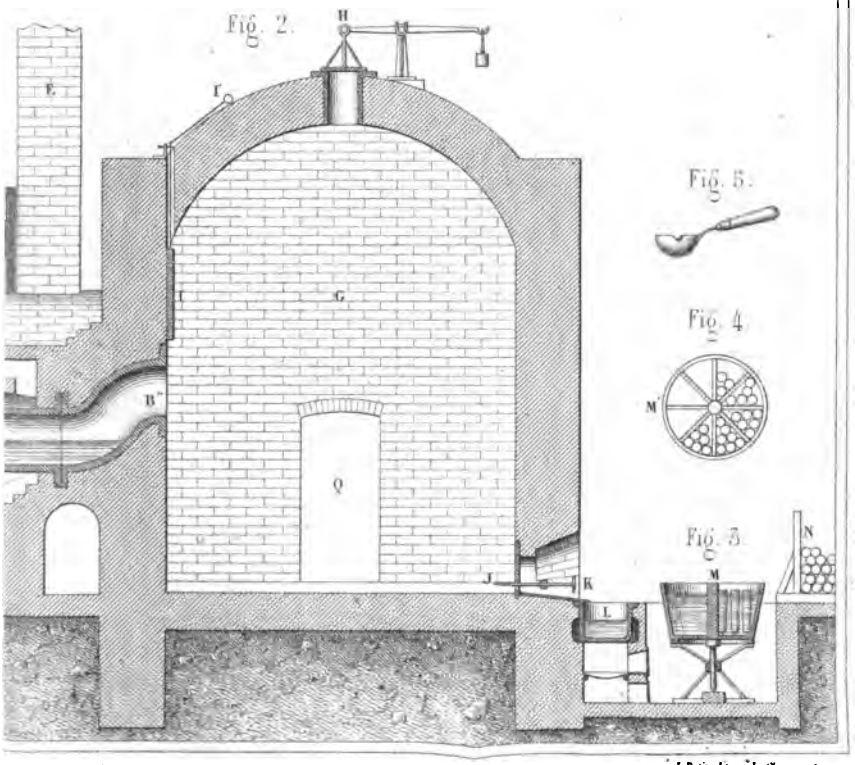


Fig. 5.

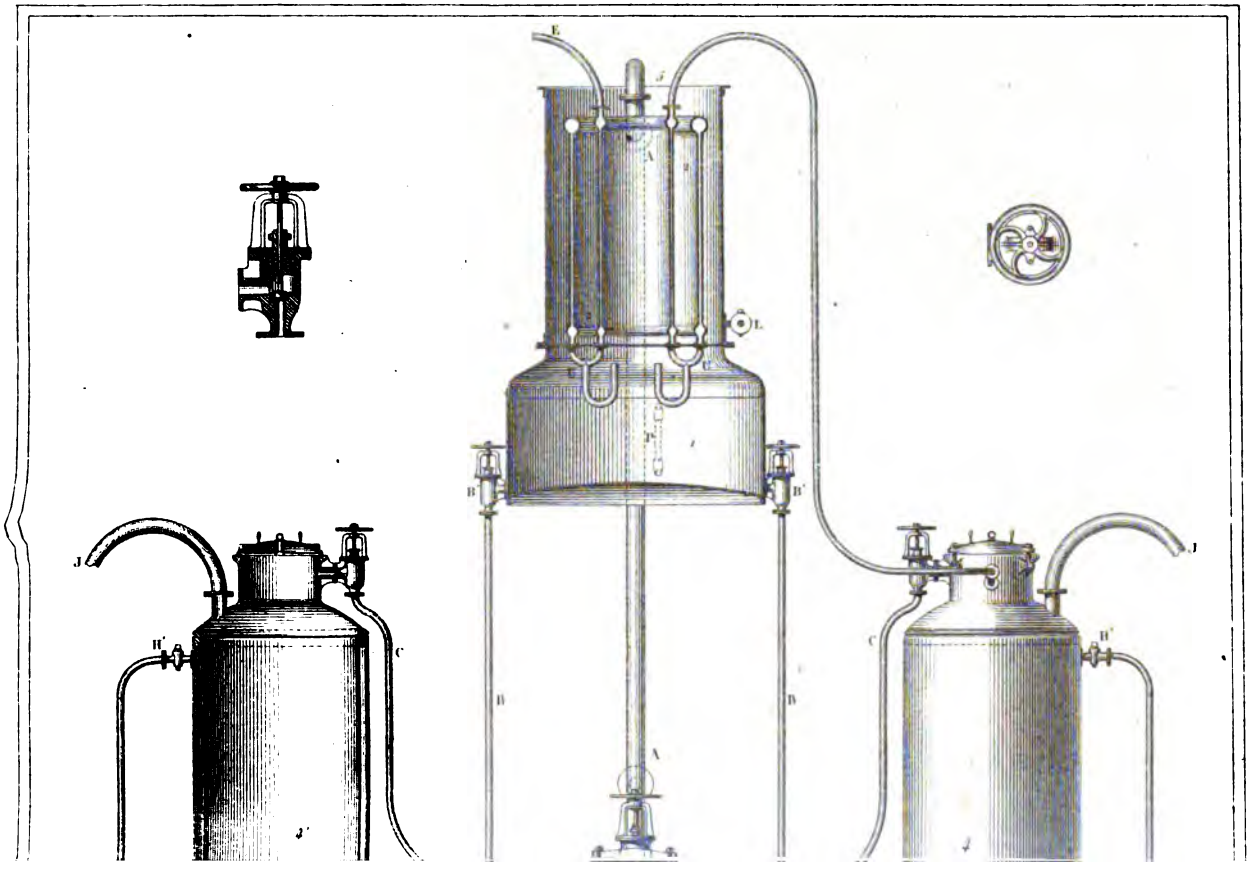
Fig. 4.

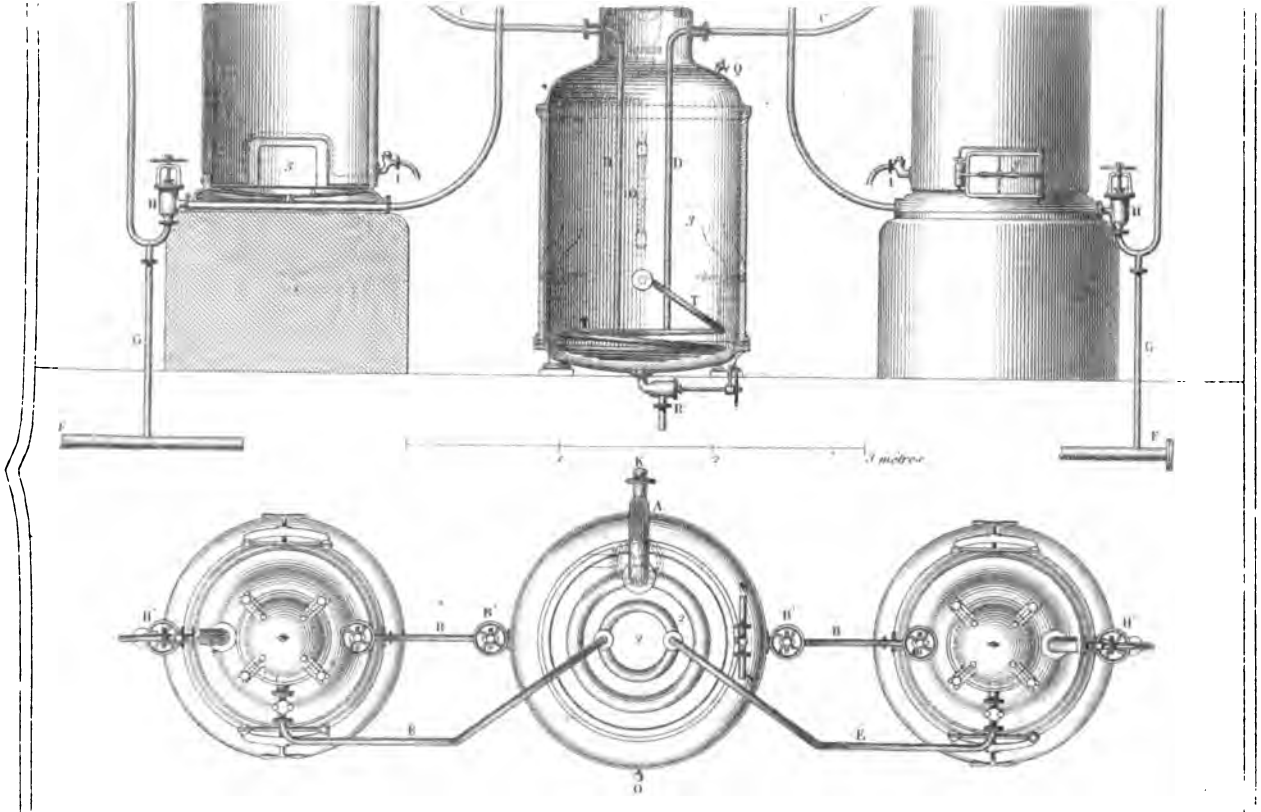
Fig. 3.

ACHETTE et Cie

J. Pelecchin et L. Chaumont sc.

EXTRACTION DES GRAISSES, HUILES, BITUME, SOUFRE PAR LE SULFURE DE CARBONE.





Payen del.

Librairie HACHETTE et Cie

Petitcolin et L. Chaumont sc

FABRICATION DES ÉTOFFES IMPERMÉABLES

Fig. 1.

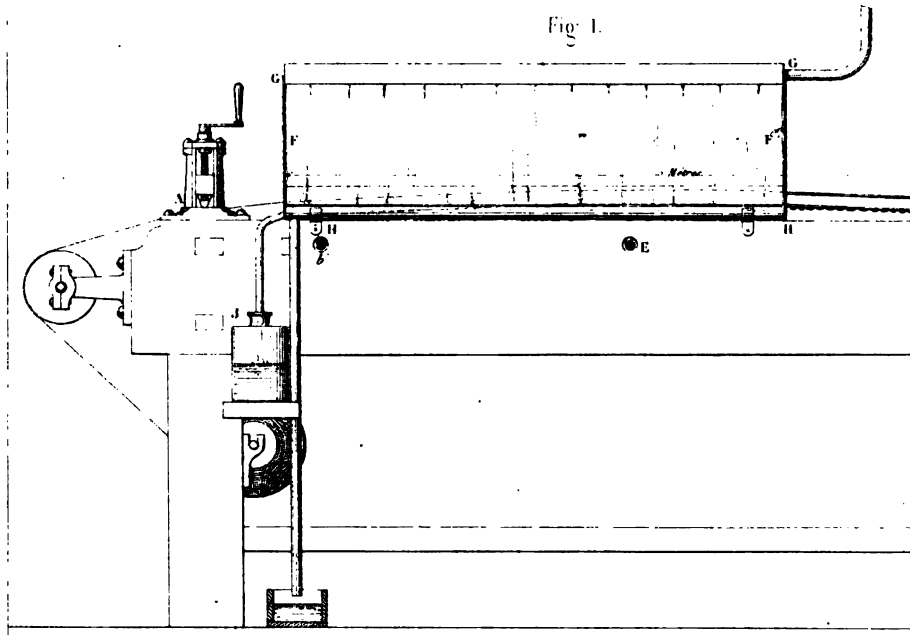
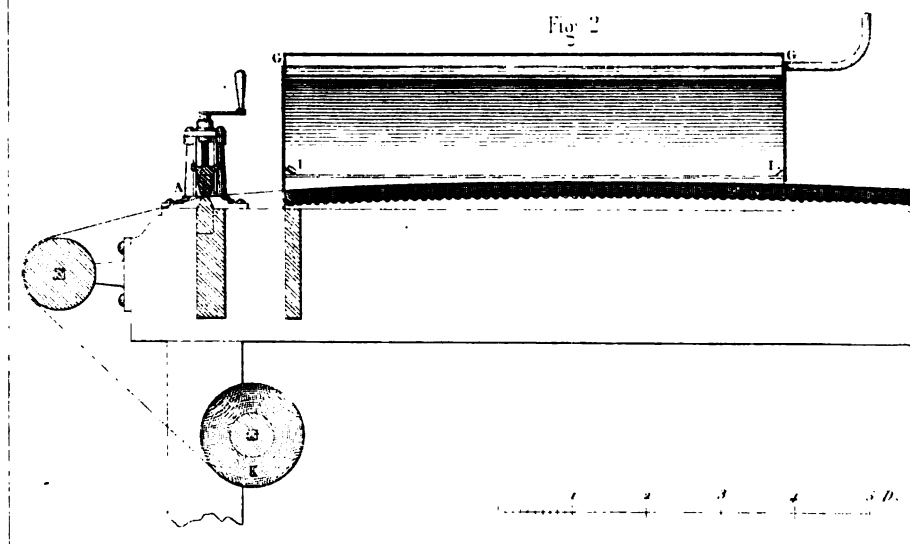


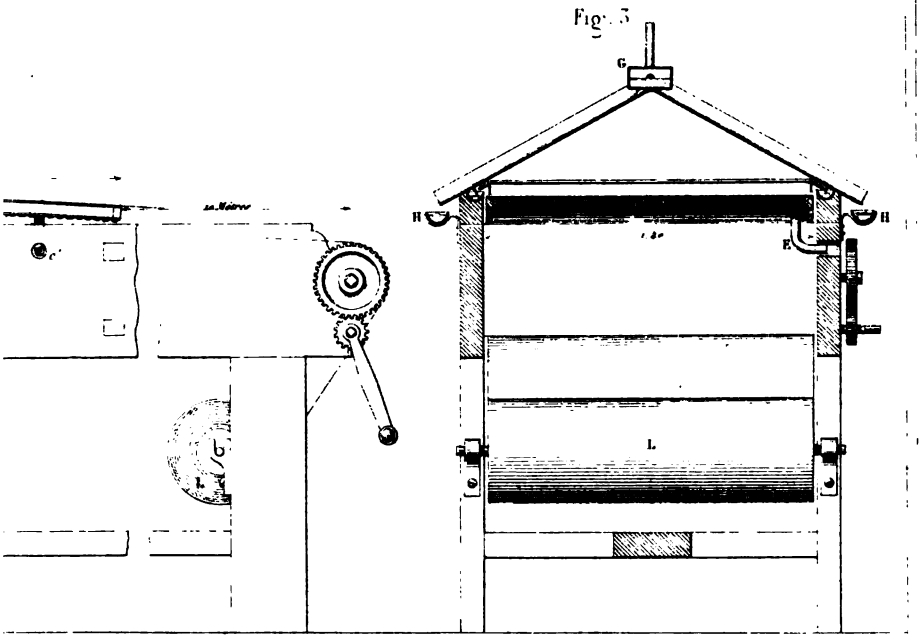
Fig. 2.



Payen del

Lith uric

Fig. 3



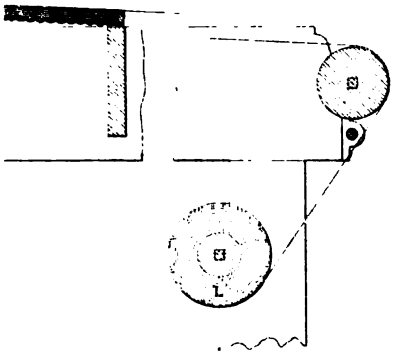


Fig. 4.

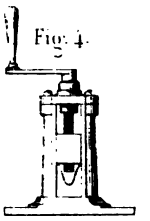


Fig. 5

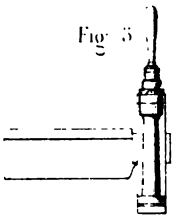


Fig. 6.

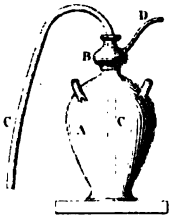
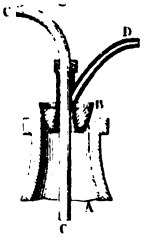
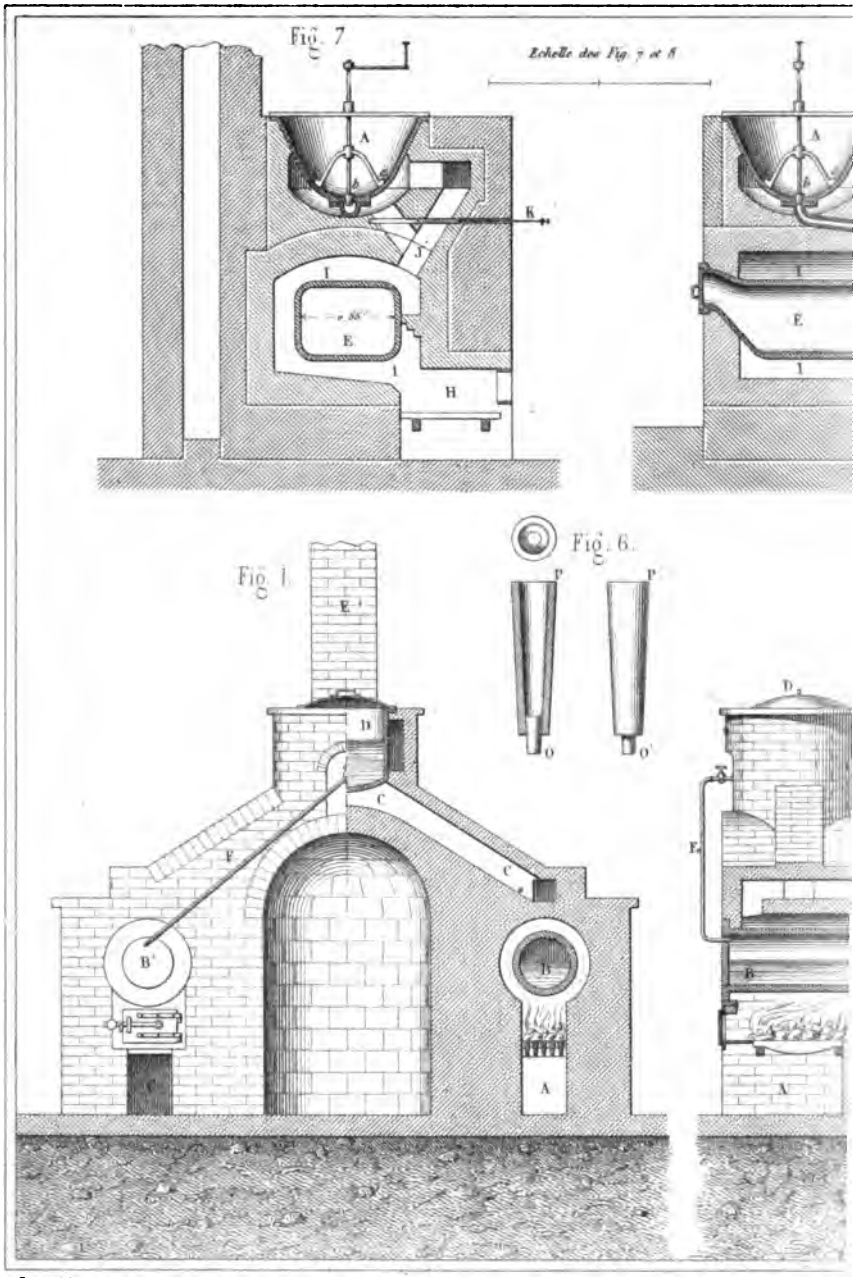


Fig. 7



OUDETTE et Cie

J. Petitcolas et L. Chaumont



Pagen del. Librairie

Fig. 8.

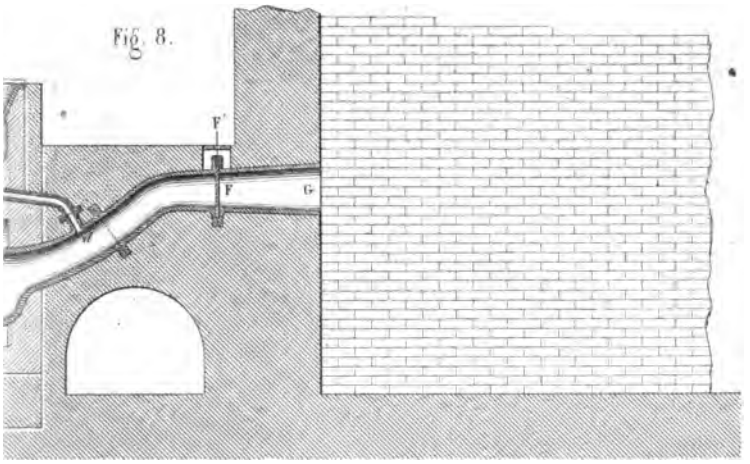


Fig. 2.

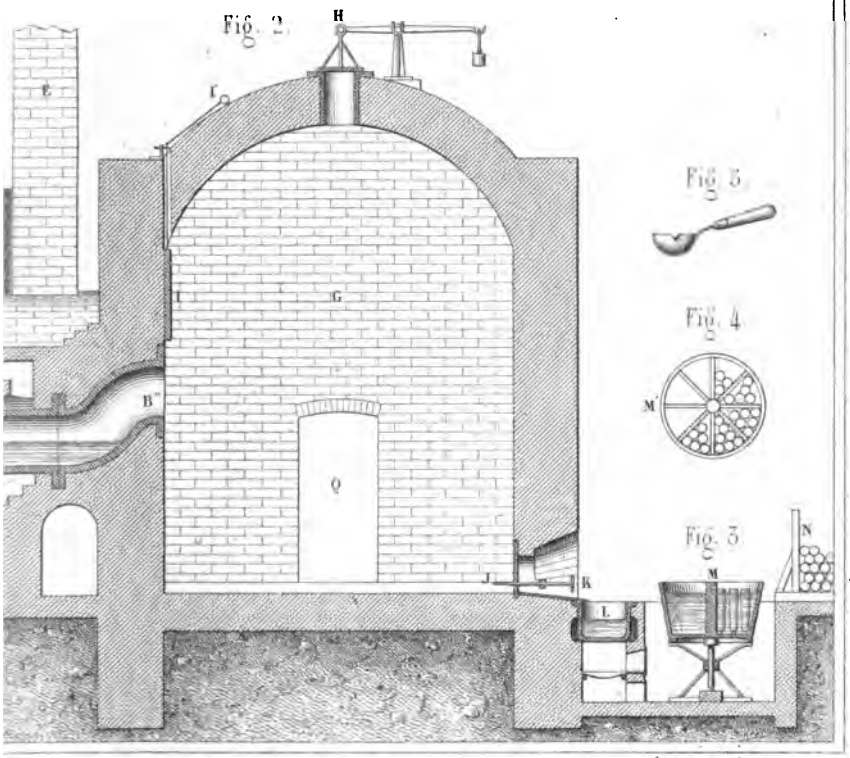


Fig. 5.

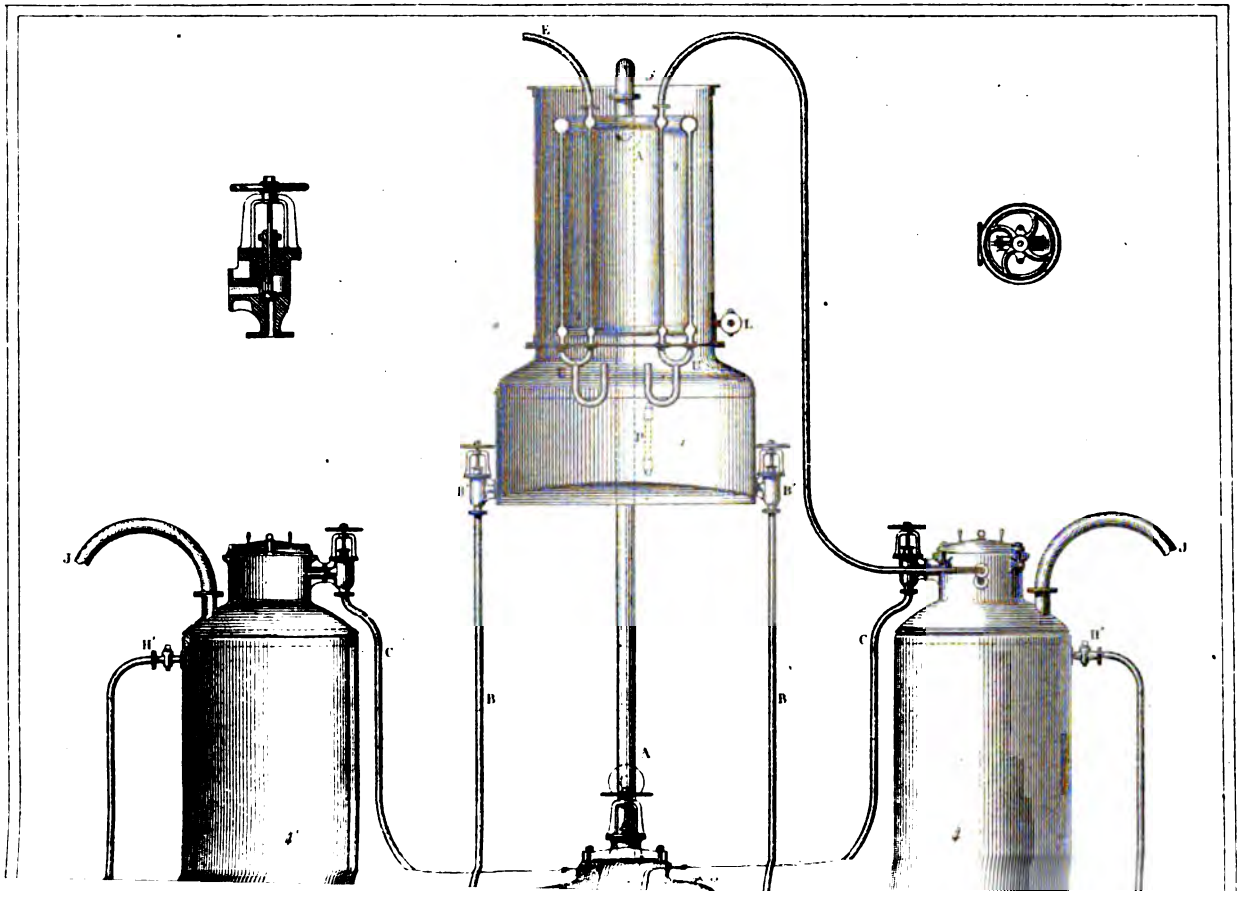
Fig. 4.

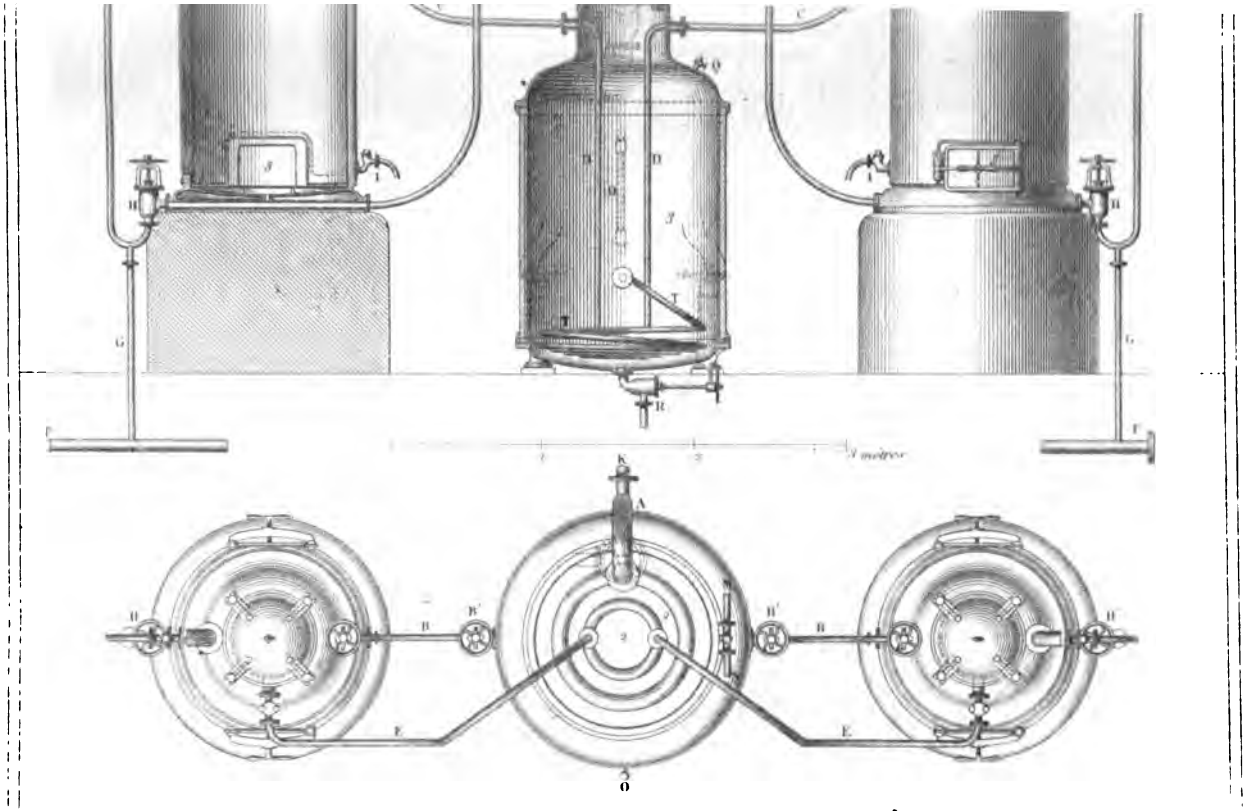
Fig. 3.

'CHETTE et C^ie

J. Petitcolin et L. Chaumont sc.

EXTRACTION DES GRAISSES, HUILES, BITUME, SOUFRE PAR LE SULFURE DE CARBONE.



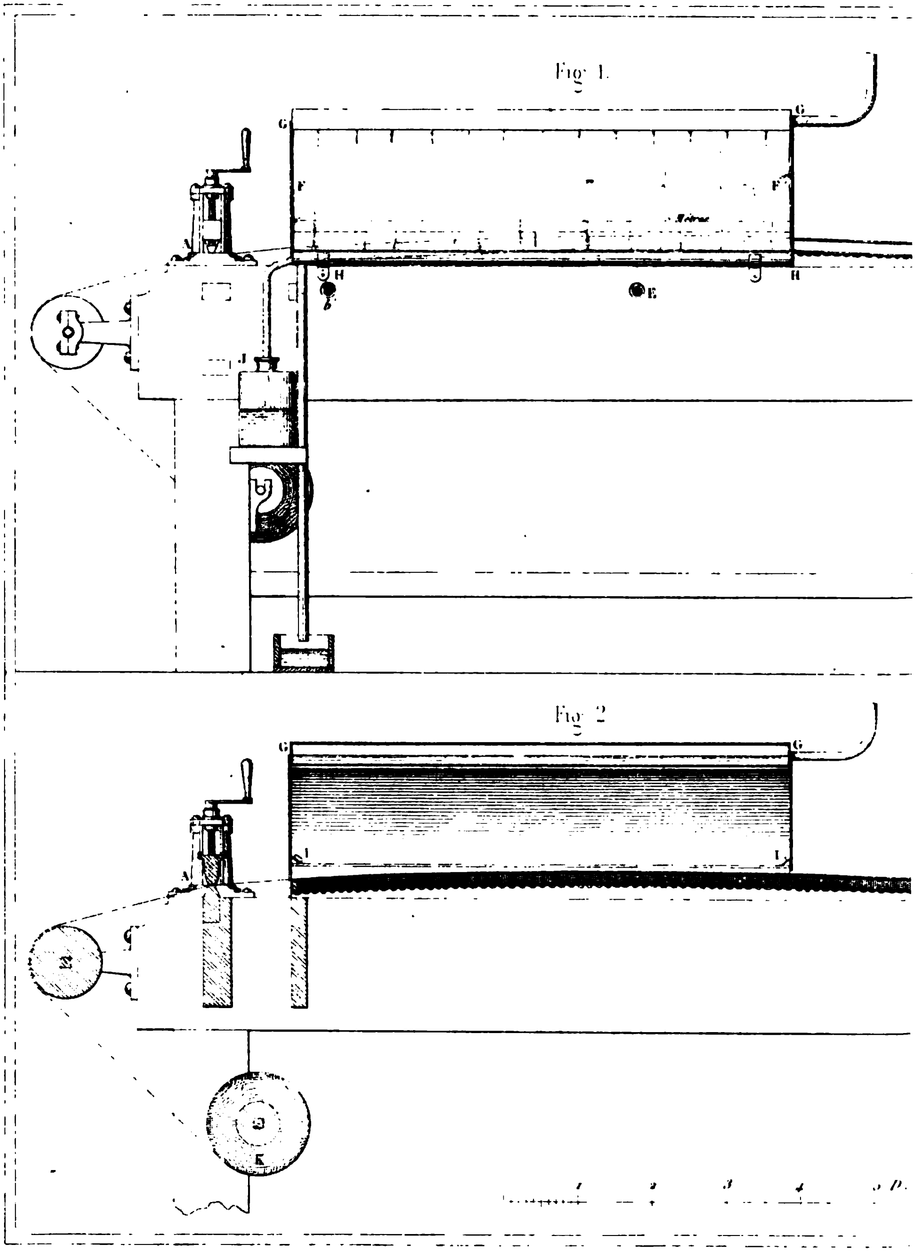


Paquin del.

Librairie HACHETTE et Cie

Pétrelon et L. Beaumont

FABRICATION DES ÉTOFFES IMPERMÉABLES



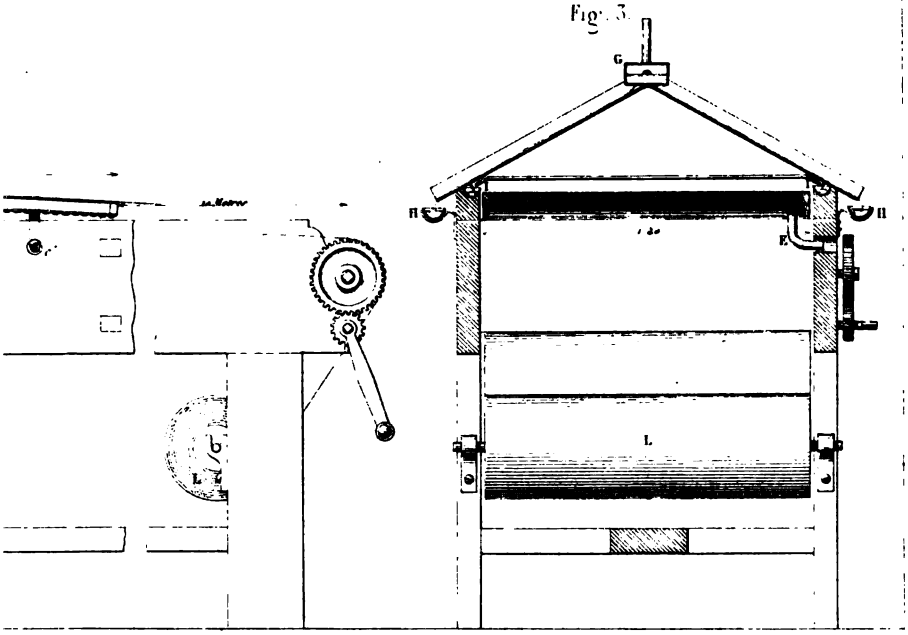
Payen del.

[illegible]

ET LAMES EN CAOUTCHOUC AMORCE-SIPHON.

Pl III

Fig. 3.



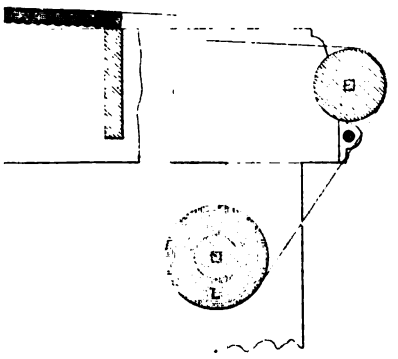


Fig. 4.

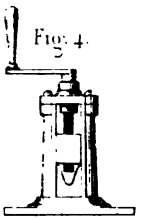


Fig. 5.

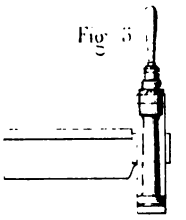


Fig. 6.

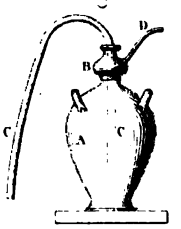
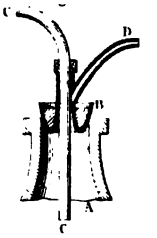


Fig. 7.



A. HILLETE et Cie

J. Pelletan et J. Chaumont sc

Fig. 1

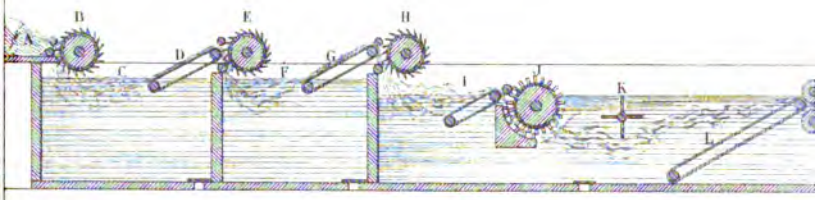


Fig. 6

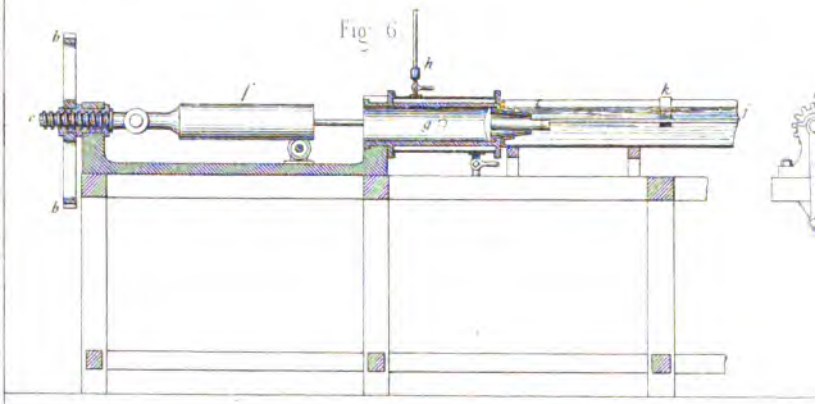
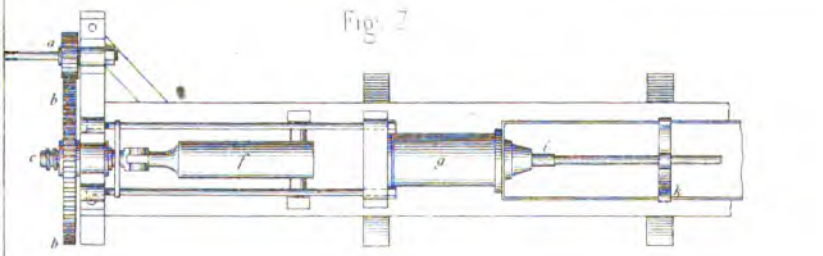


Fig. 7



Payen del

Librairie

Fig. 2

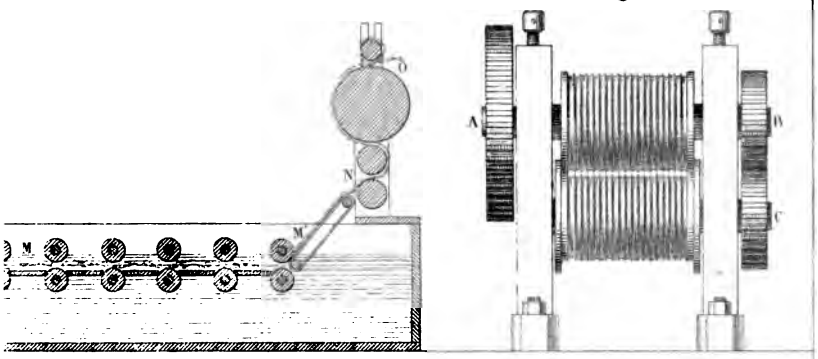


Fig. 8.

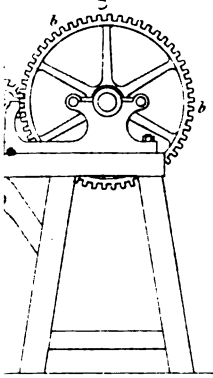


Fig. 3

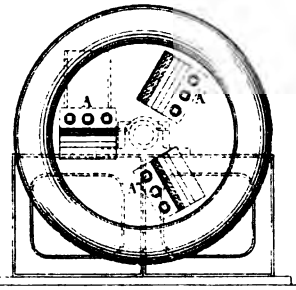


Fig. 4.

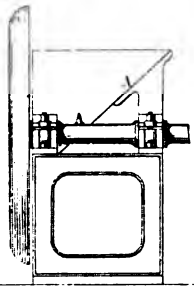


Fig. 9.

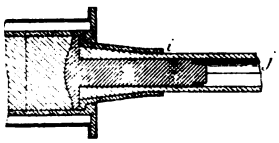
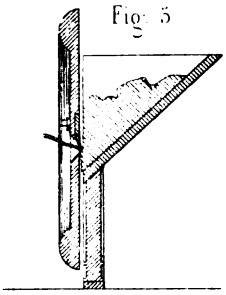


Fig. 11.

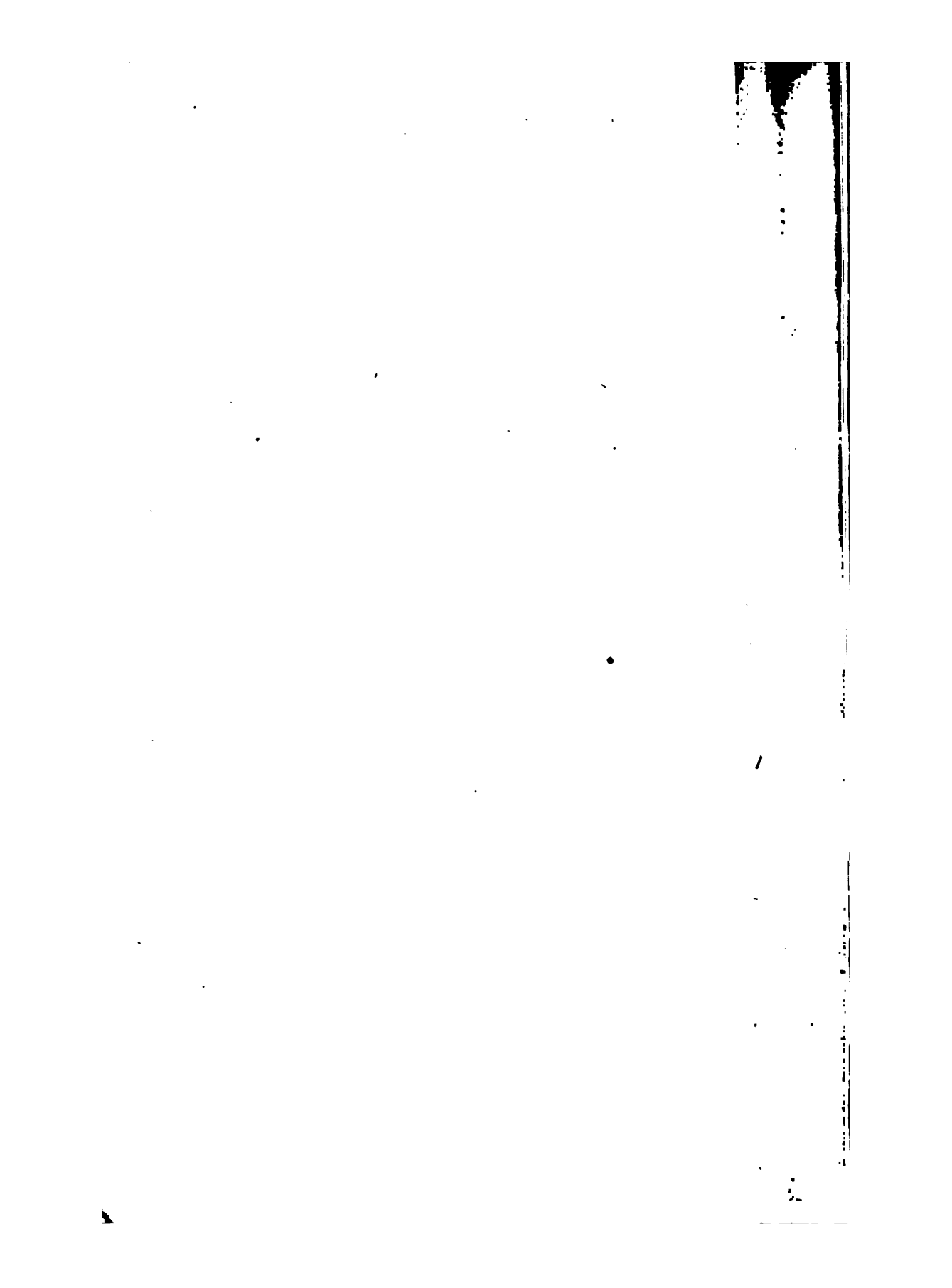
Fig. 10

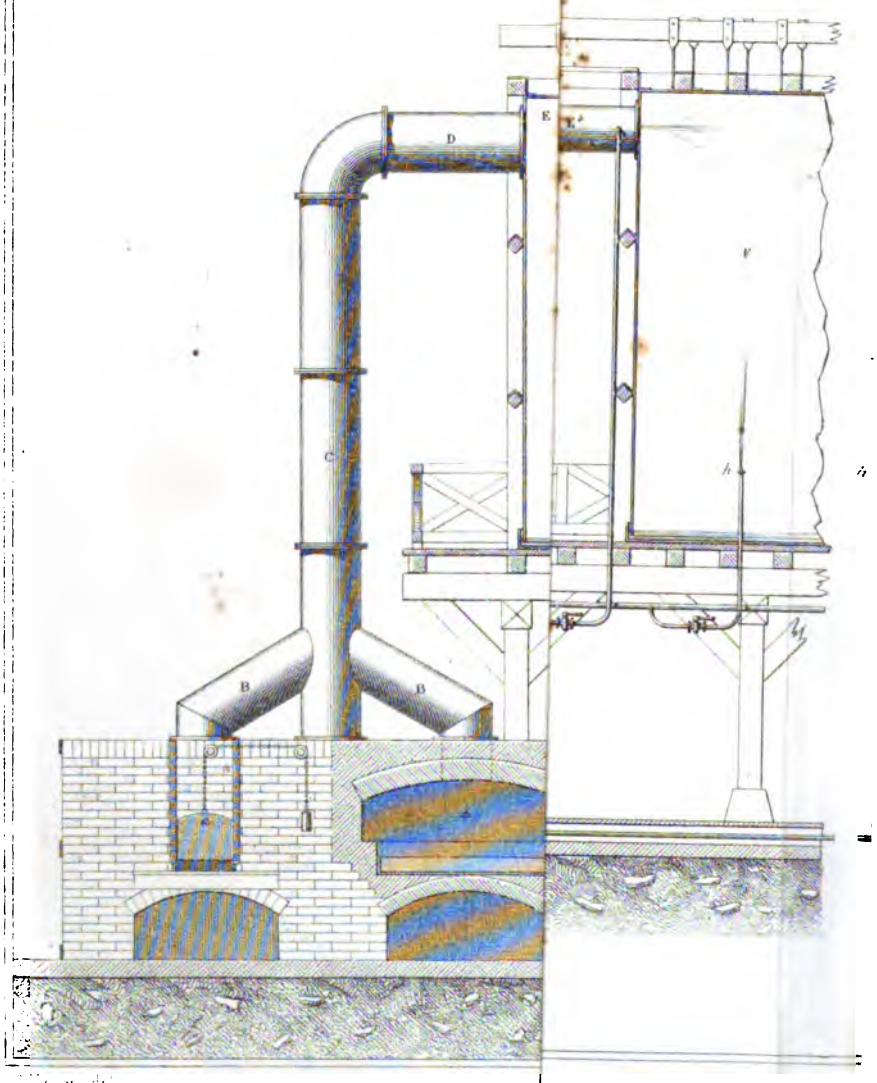
Fig. 5



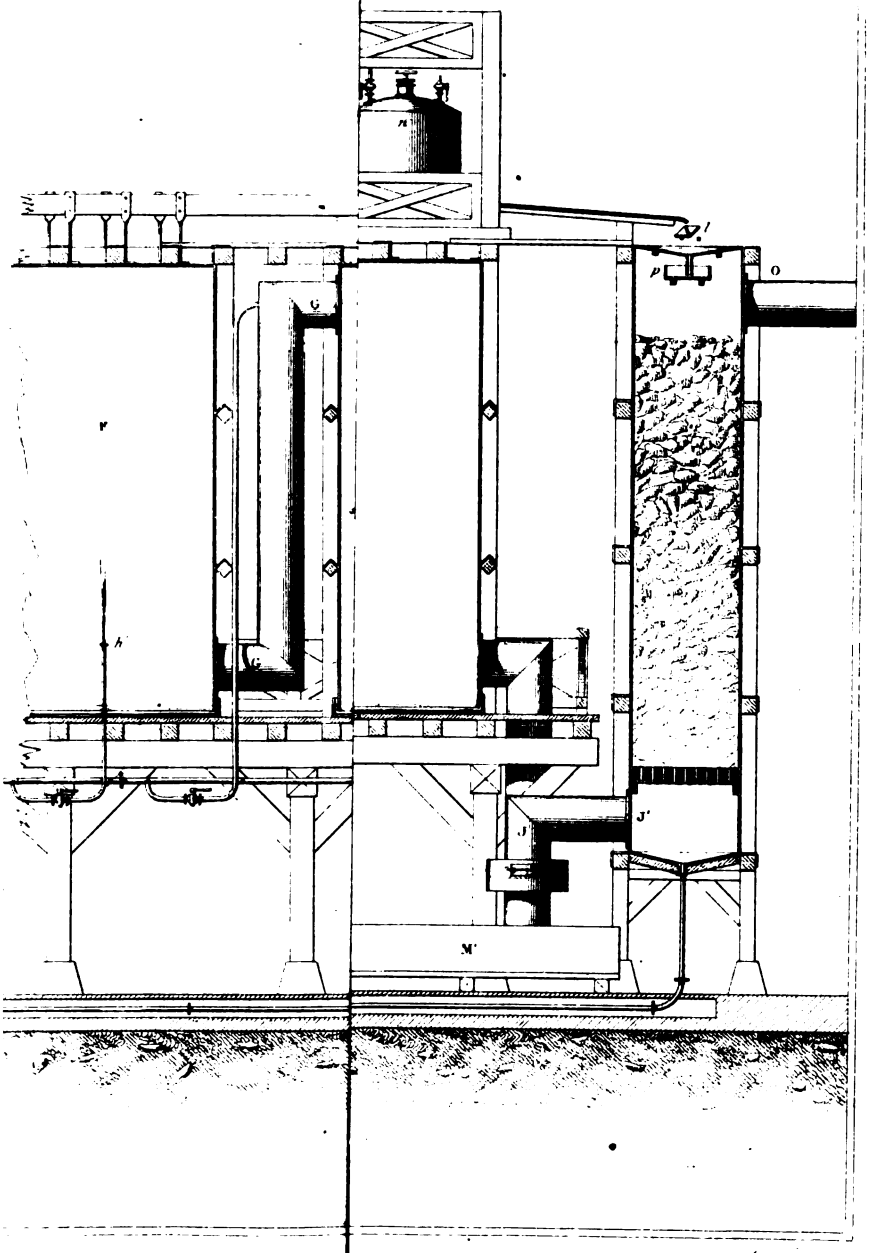
VIETTE et Cie

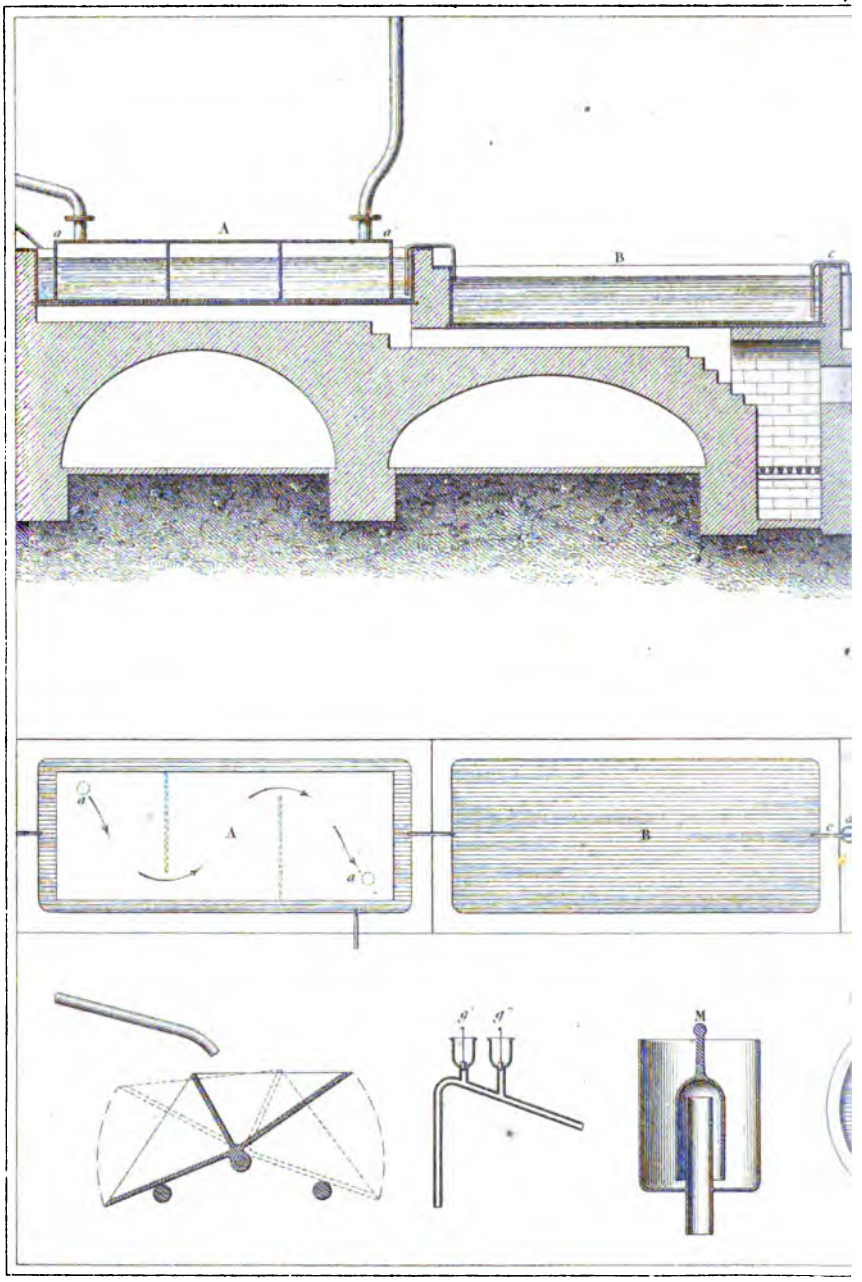
J. Pecqueur et L. Chanmont sc.

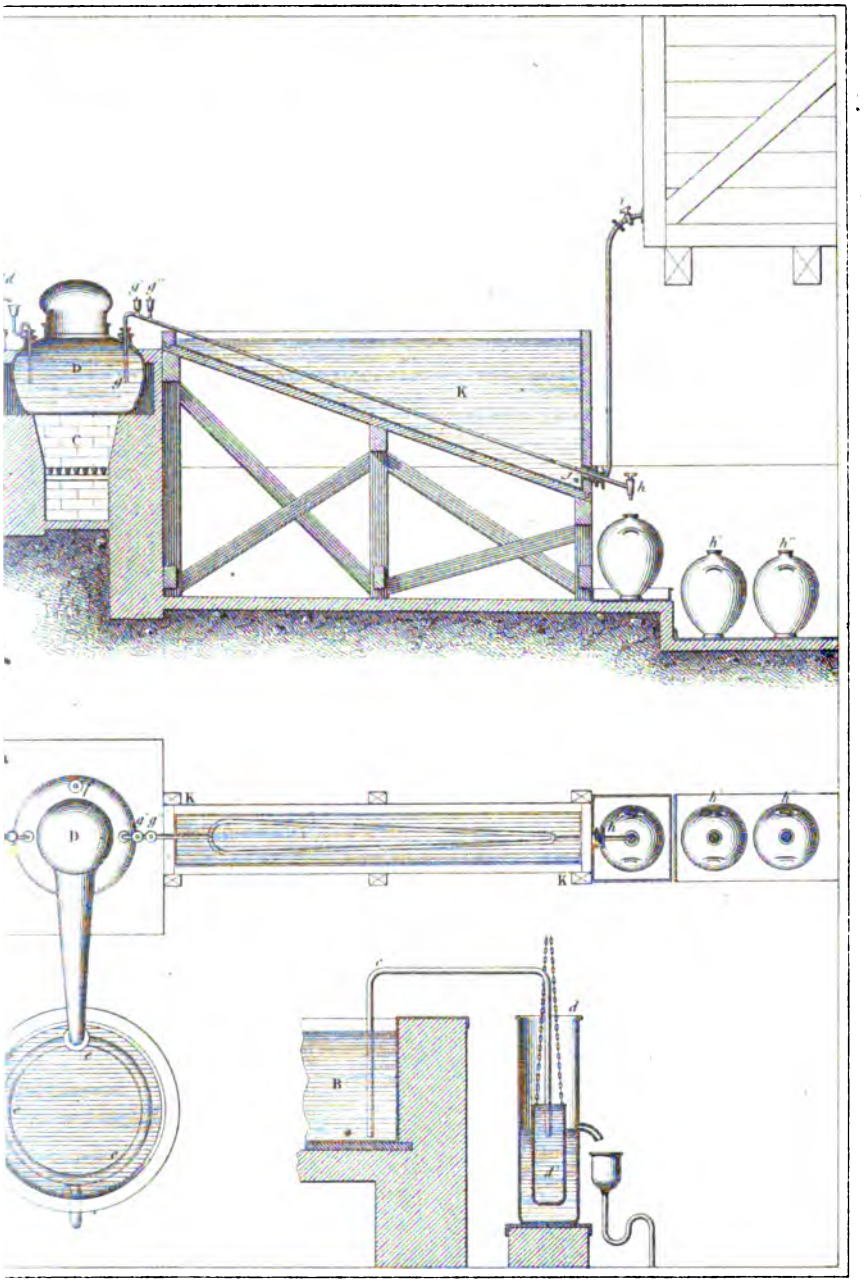



D
E
F
C
h
B
B

ON DE L'ACIDE SULFURIQUE

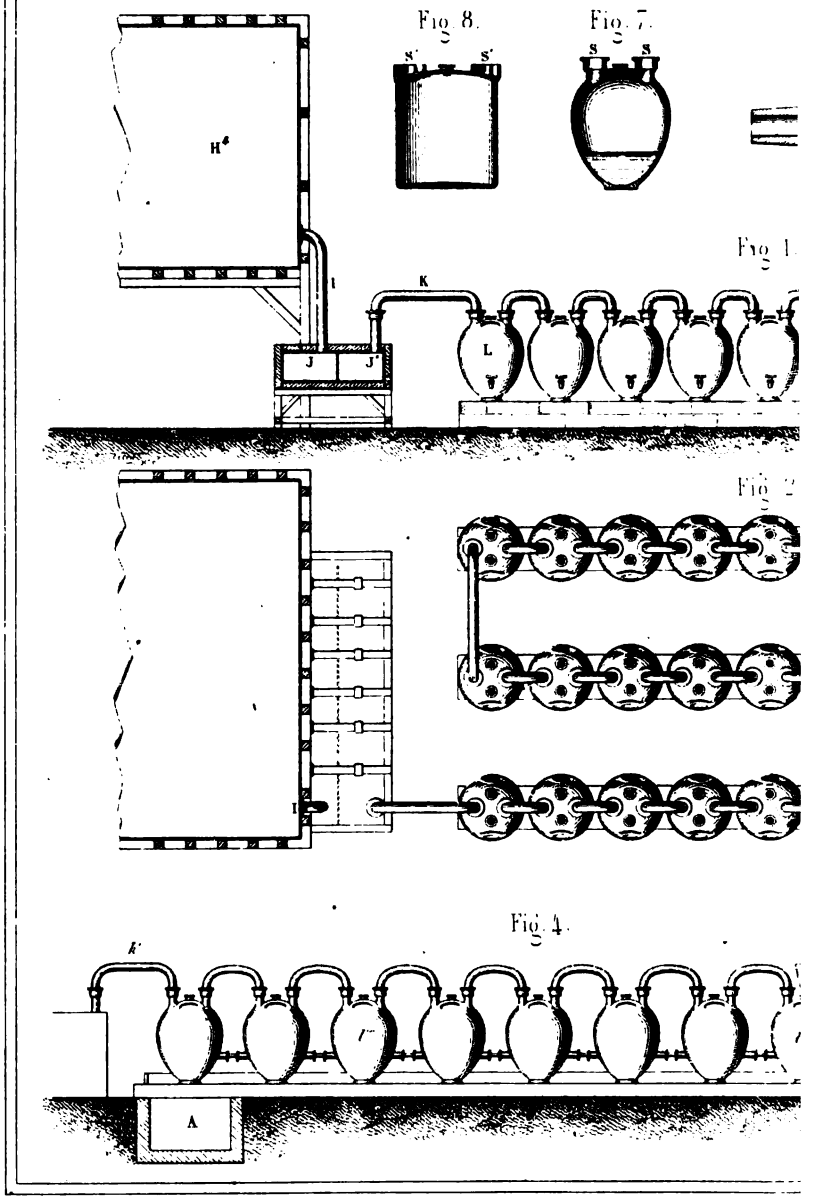



a
A
a
B
c
a
A
a
B
c
a'
a''
M



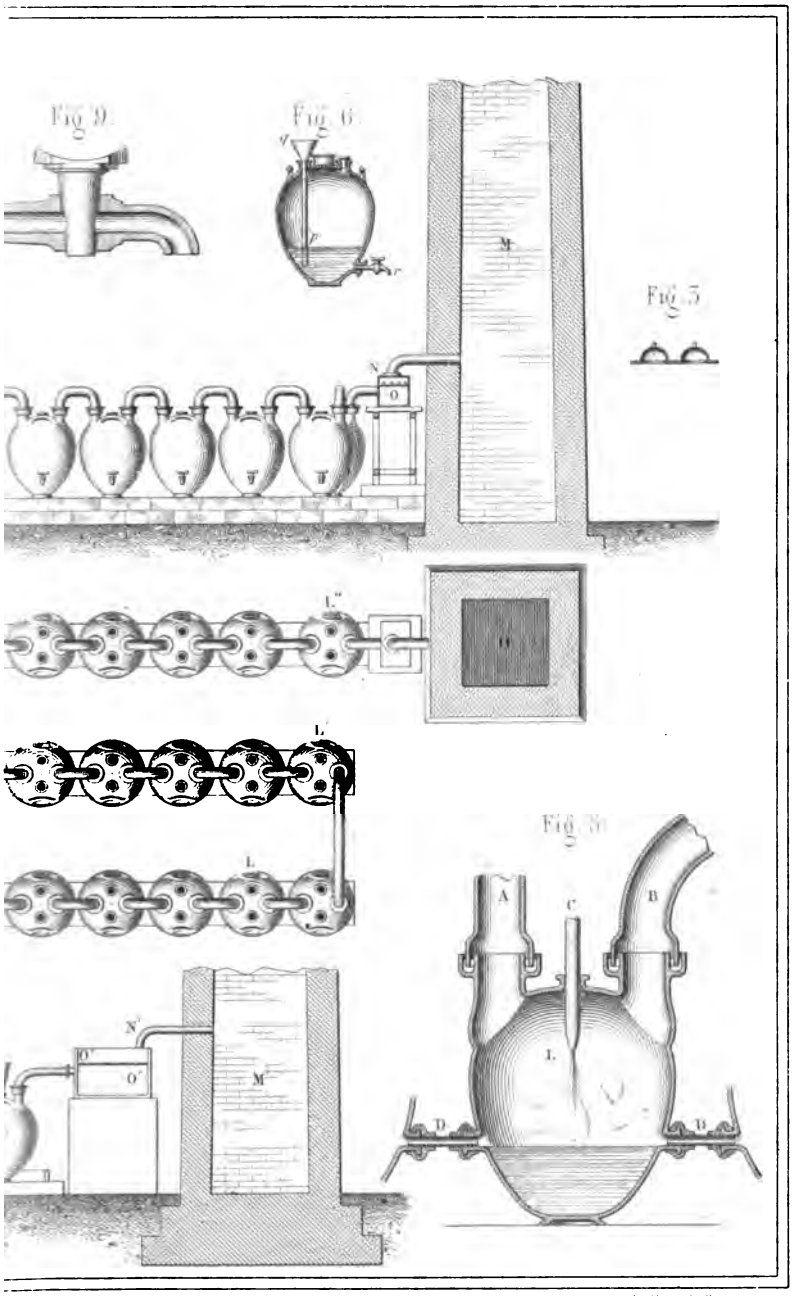
CHETTE et Cie

J. Petitcolas et L. Chaumont sc



Payen del

Librairie __ H.



CHETTE et Cie J. Petitcolin et L. Chaumont sc.

Fig. 2.

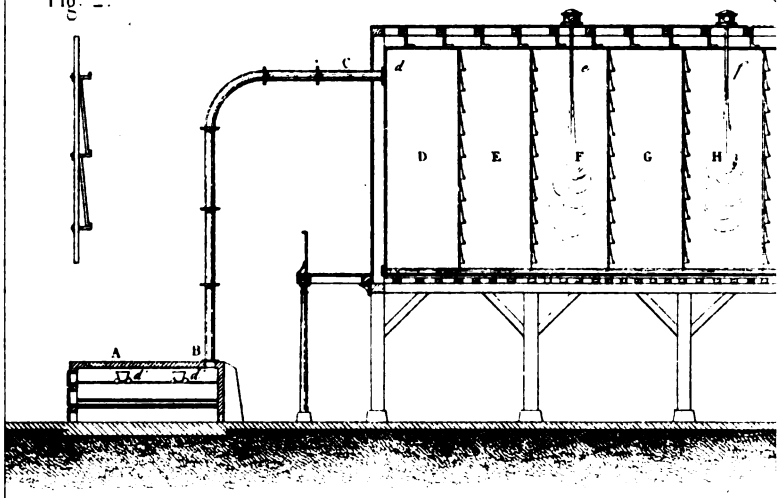
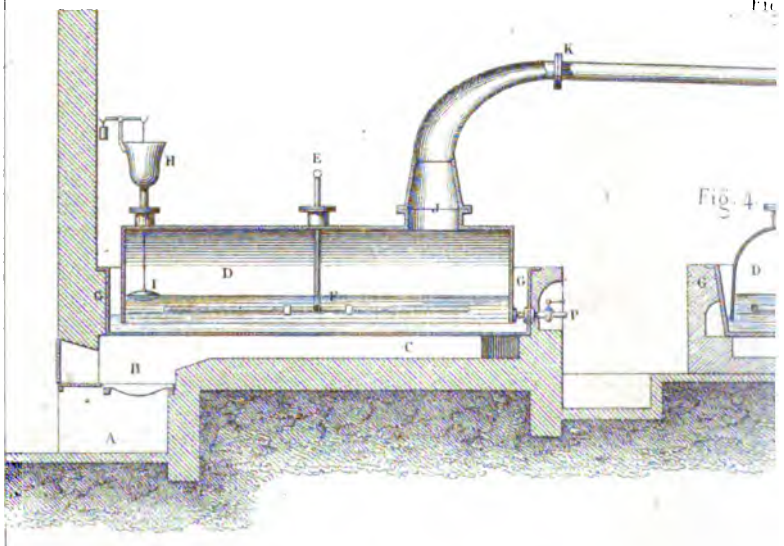


Fig. 4

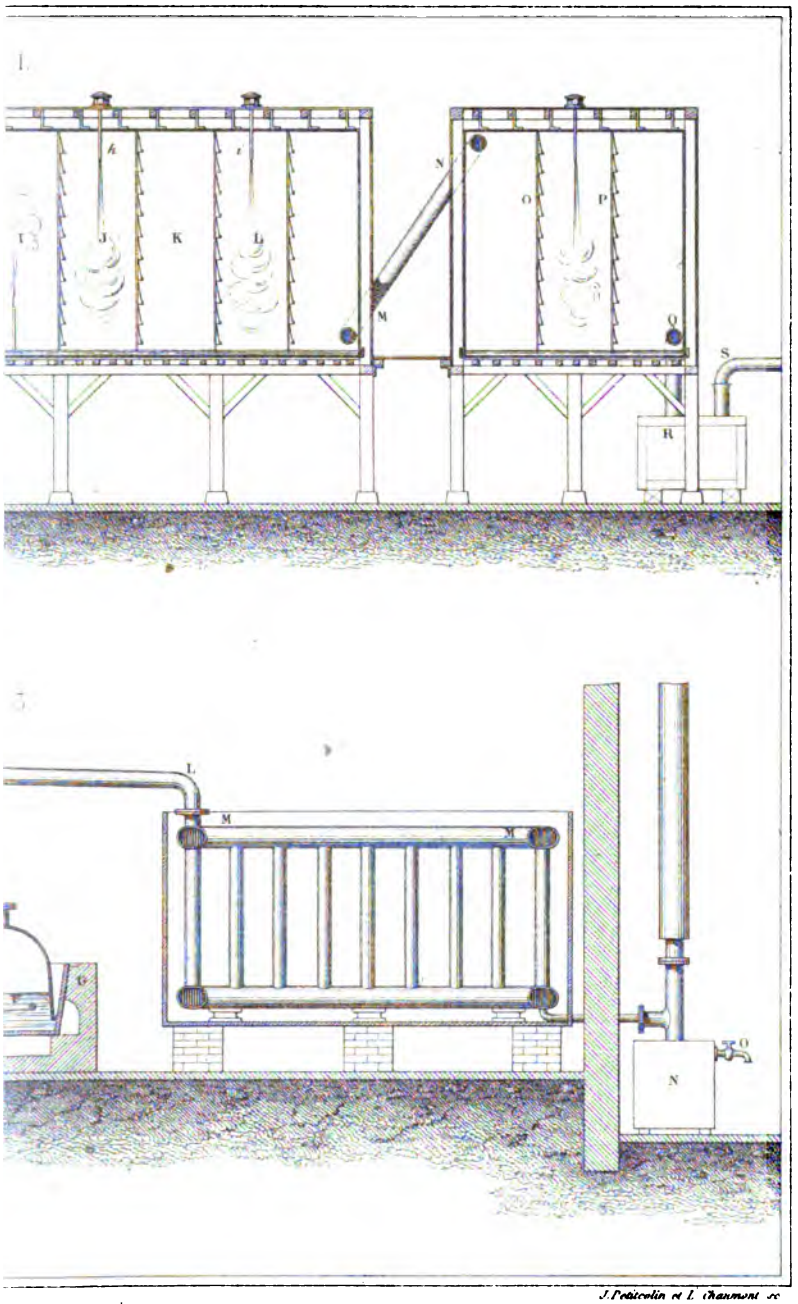


Payen del.

Librairie

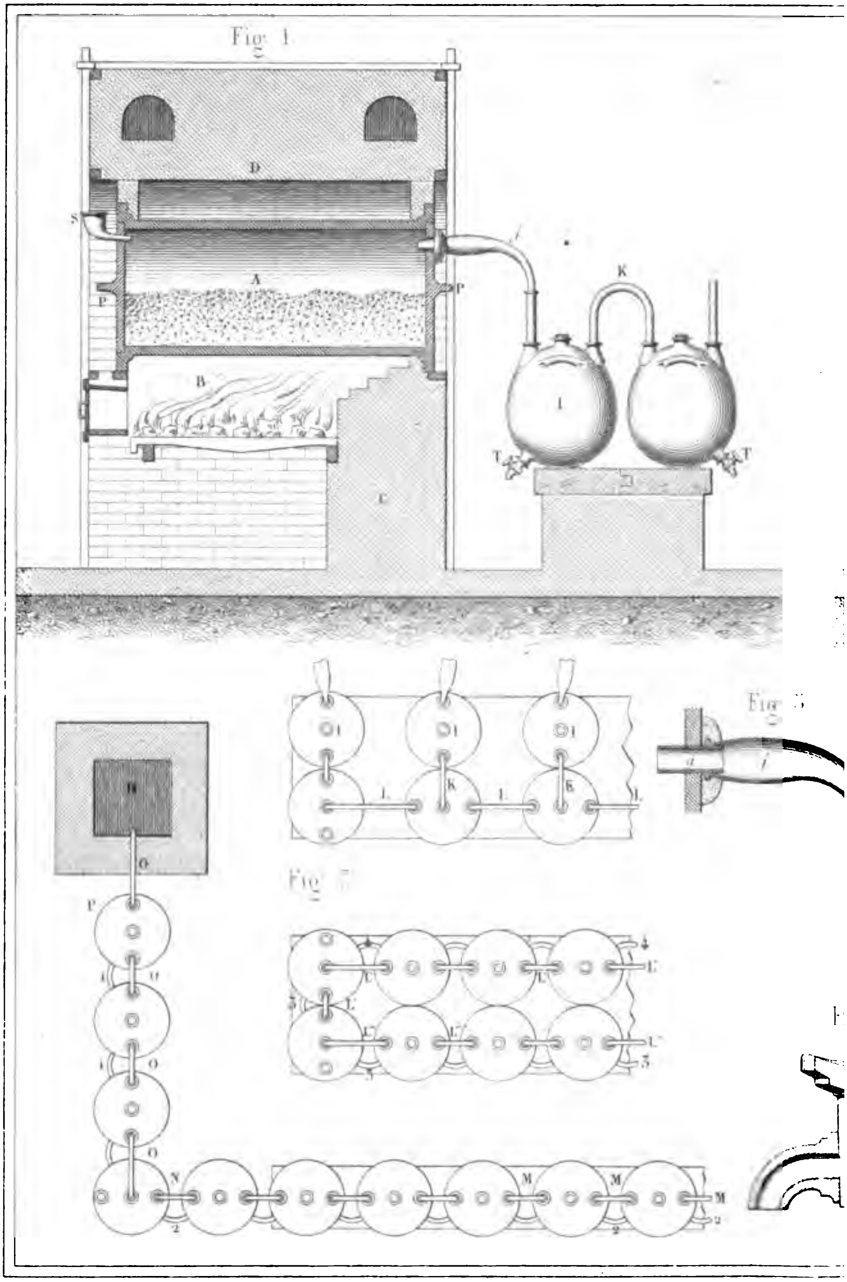
S GRAS PAR DISTILLATION.

Pl. VIII.



J. Petitcolin et L. Chaumont sc

ACHETTE et Cie



Payen del.

Librairie — H

Fig. 2.

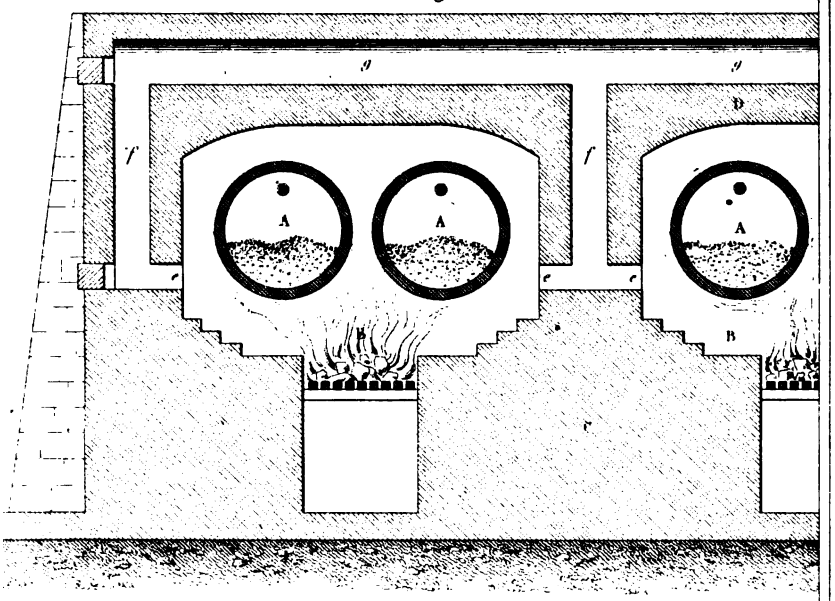
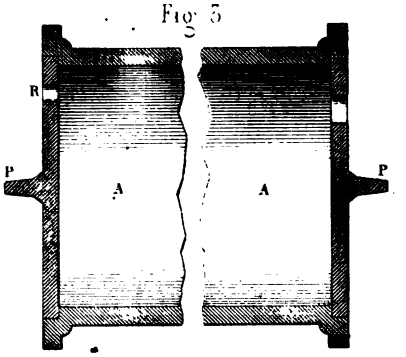


Fig. 3



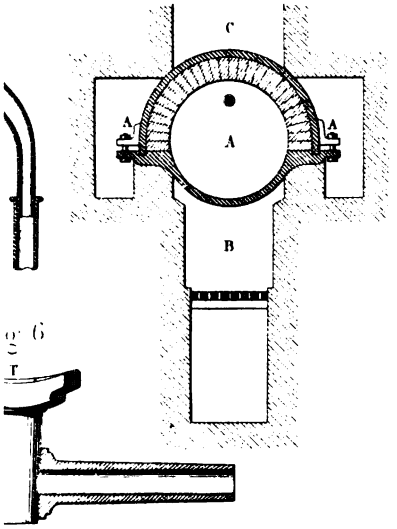
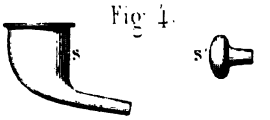


Fig. 6

Fig. 4.



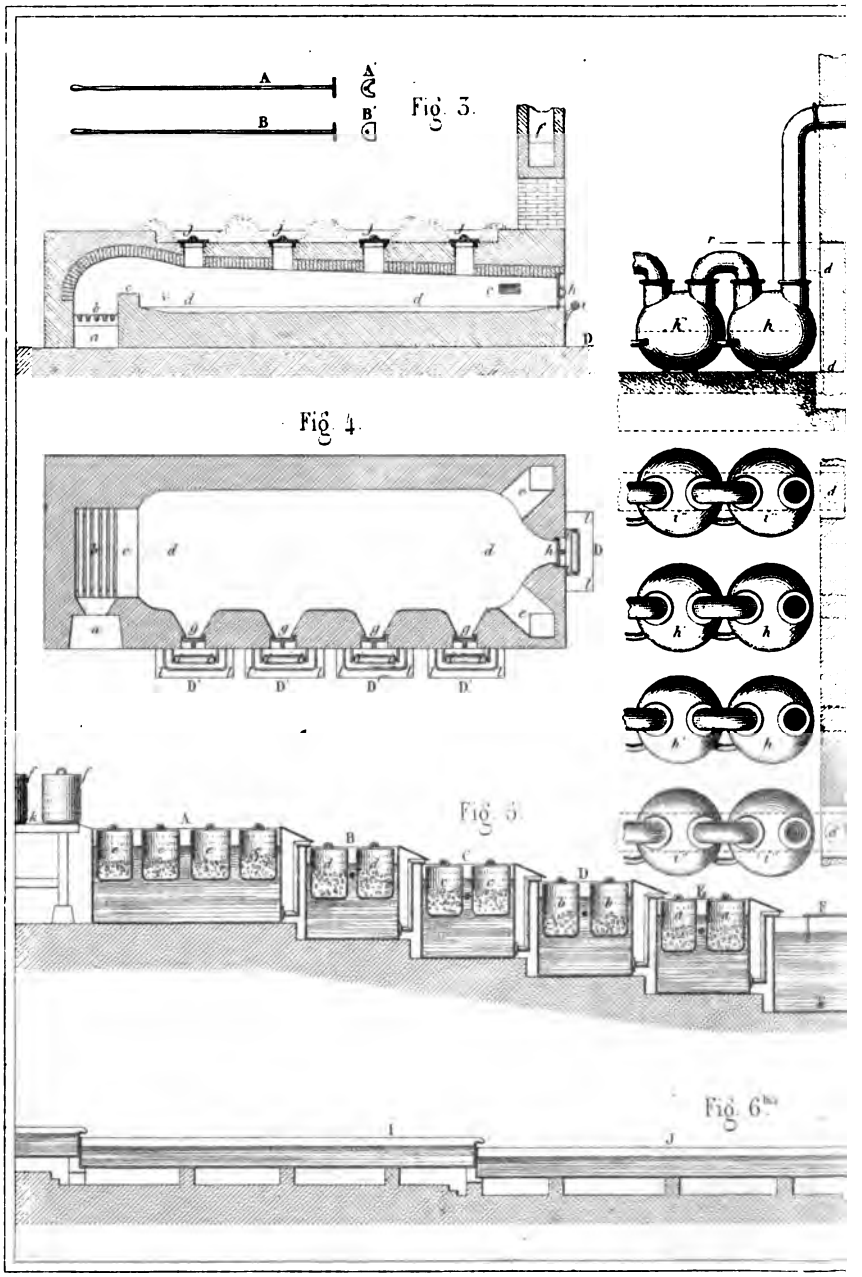

A
B
A'
B'
Fig. 3.
Fig. 4.
Fig. 5
Fig. 6bis

Fig. 1.

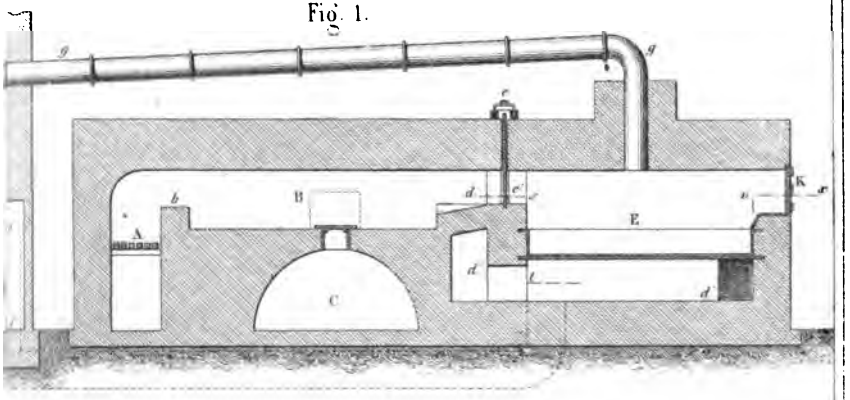


Fig. 2.

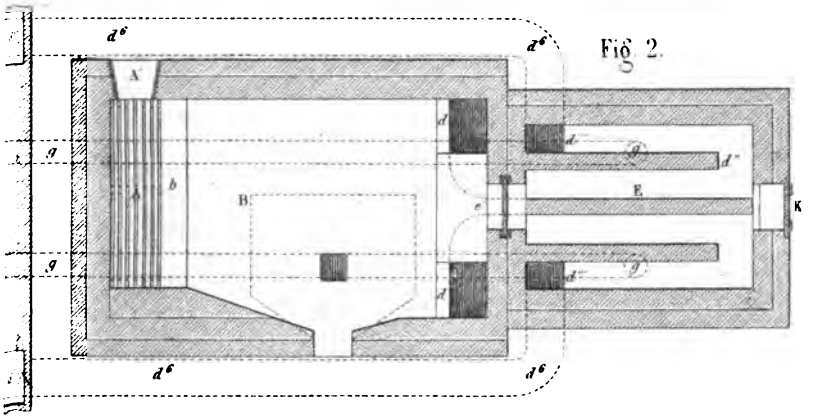


Fig. 6

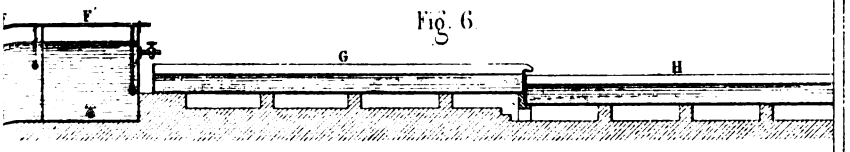
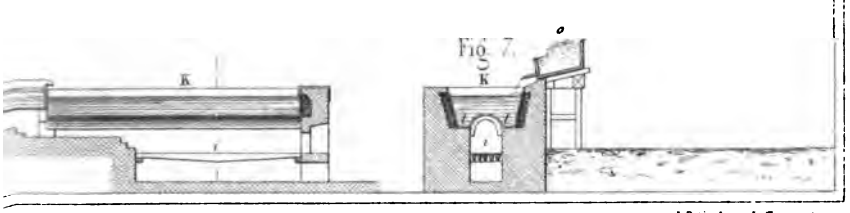
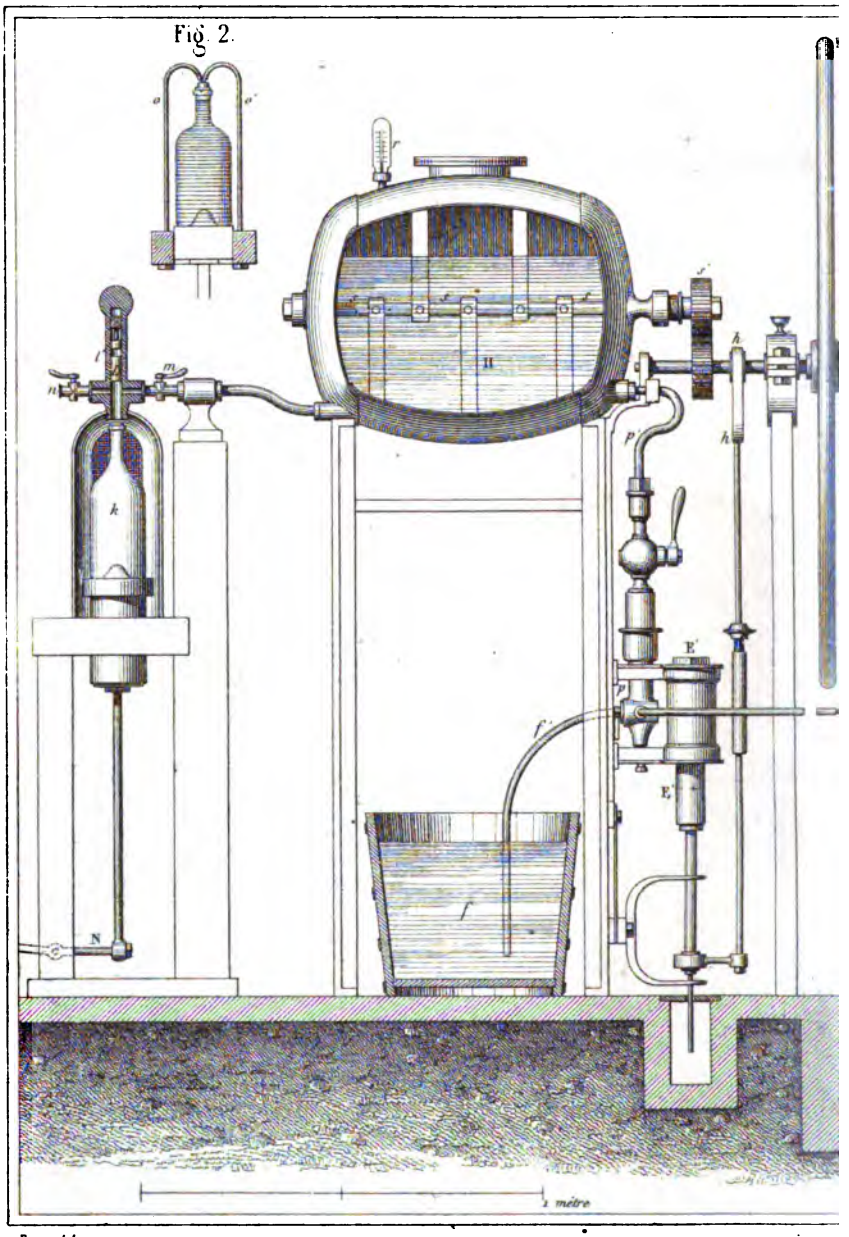


Fig. 7.



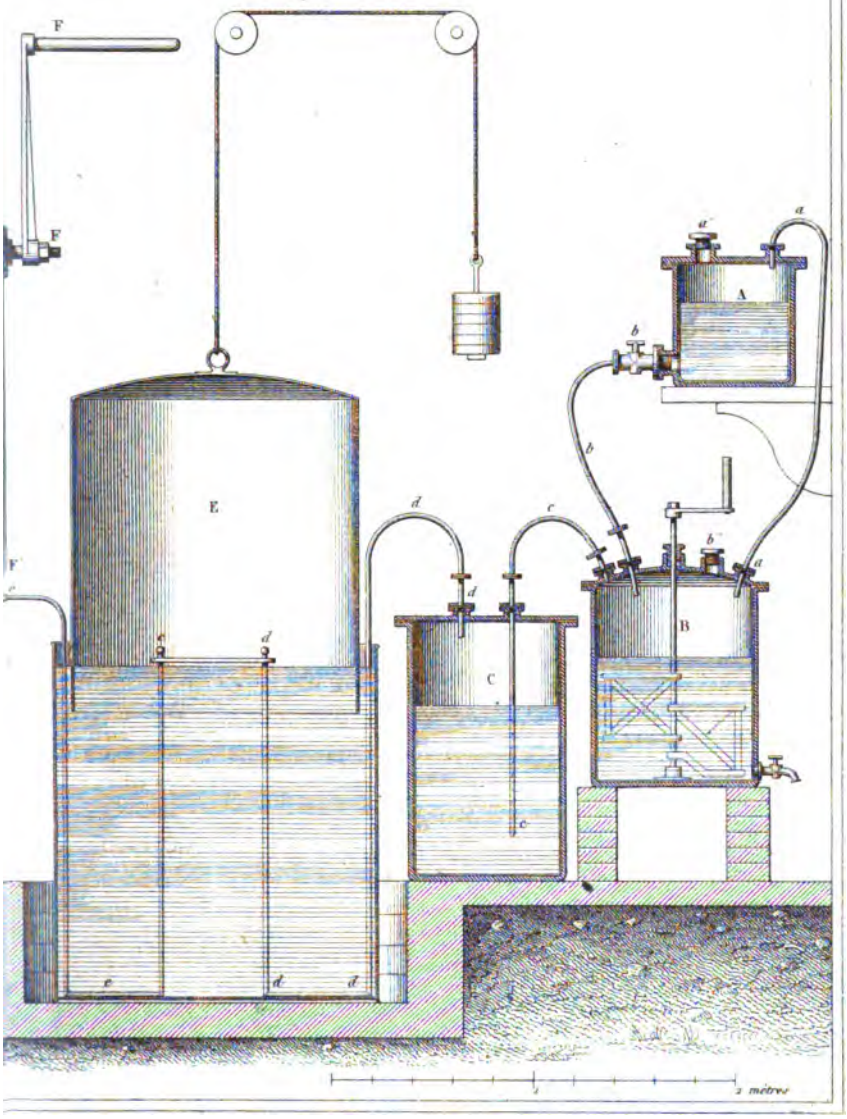
HACHETTE et Cie J. Pelouze et L. Chevallier

Fig. 2.



Poyen del Librairie

Fig. 1.



HACHETTE et Cie

J. Petitcolin et L. Chaumont sc.

Fig. 1.

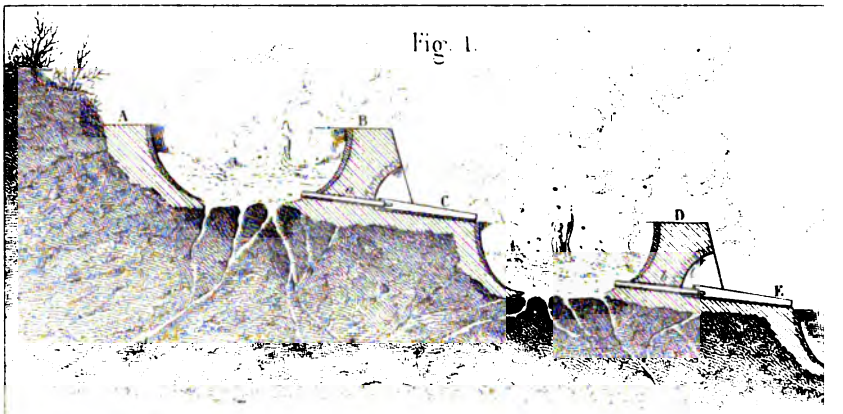


Fig. 2.

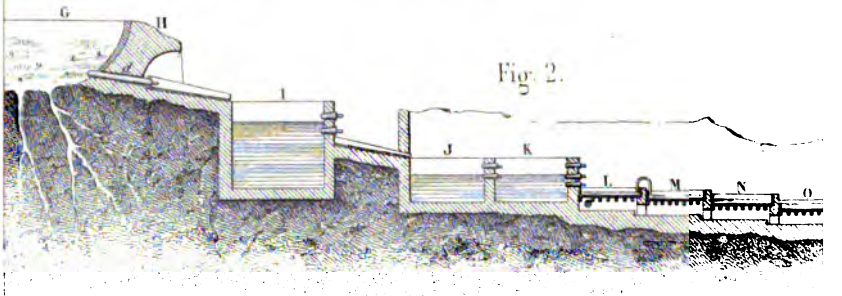
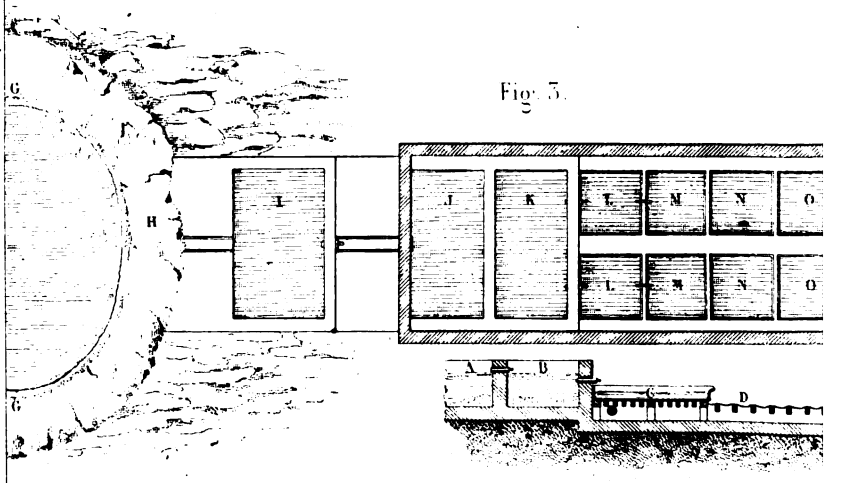


Fig. 3.



Payen del.

Librairie

Fig. 8

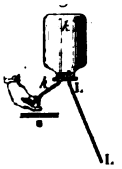
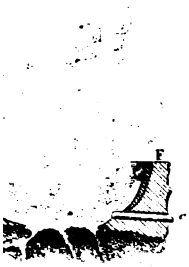


Fig. 7.



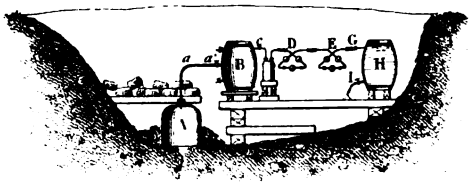
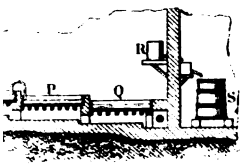


Fig. 4.



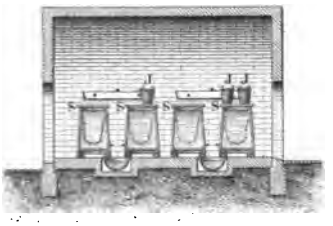
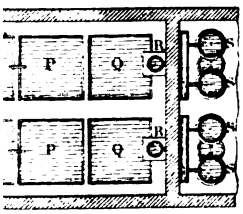


Fig. 5.



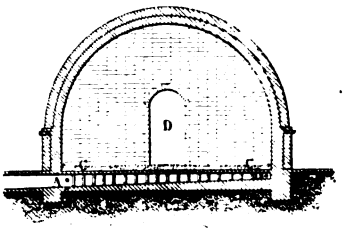
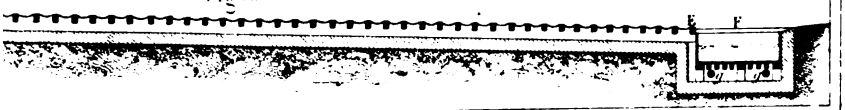


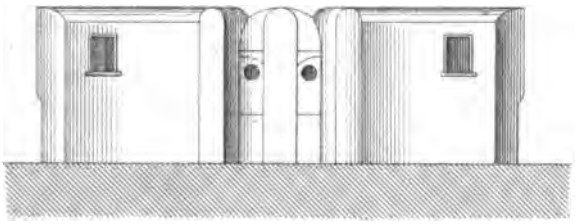
Fig. 6.



J. Pelouze et L. Thaumont sc.

WIHETTE et Cie

Fig. 1
Vue extérieure.



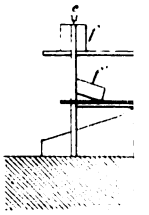


Fig. 2
Four à Vitres à la Houille
Coupe suivant A. B.

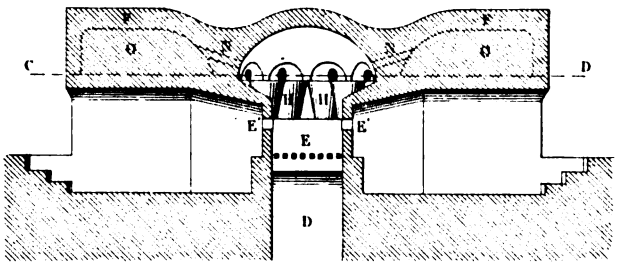
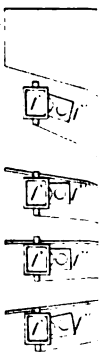


Fig. 3



Coupe suivant C. D.

Fig. 7.

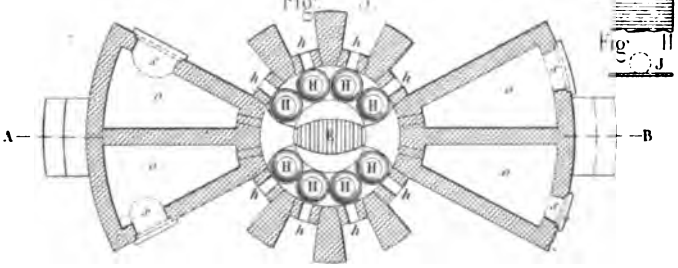
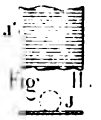
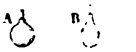


Fig. 11.





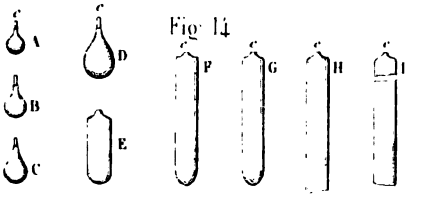
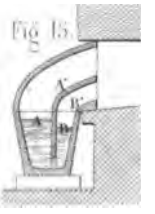


Fig. 14

Fig. 15.



Verres à Vitres au bois.

Fig. 4.

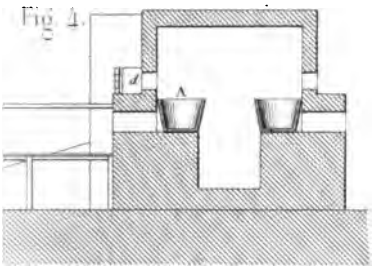
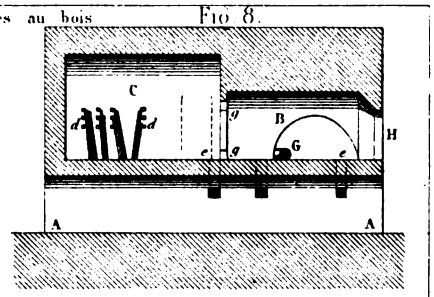


Fig. 8.



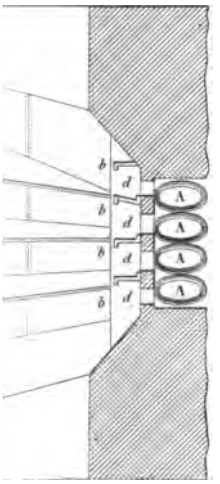


Fig. 6.

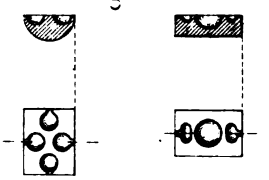


Fig. 7.

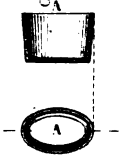
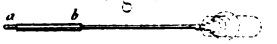


Fig. 9.



Fabrication du Verre en Tables.

Fig. 12.

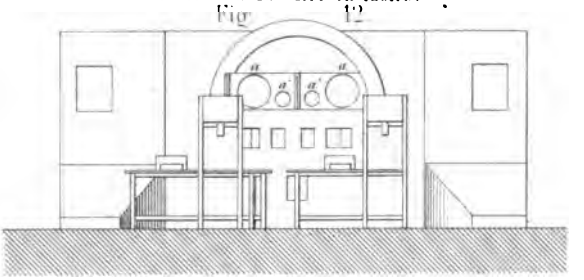


Fig. 10.

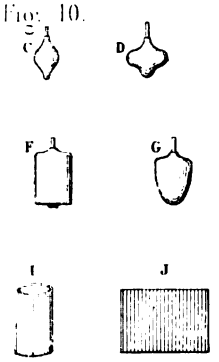
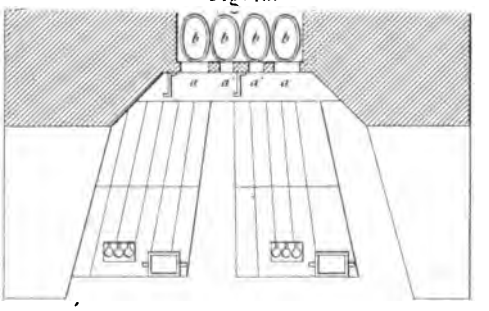
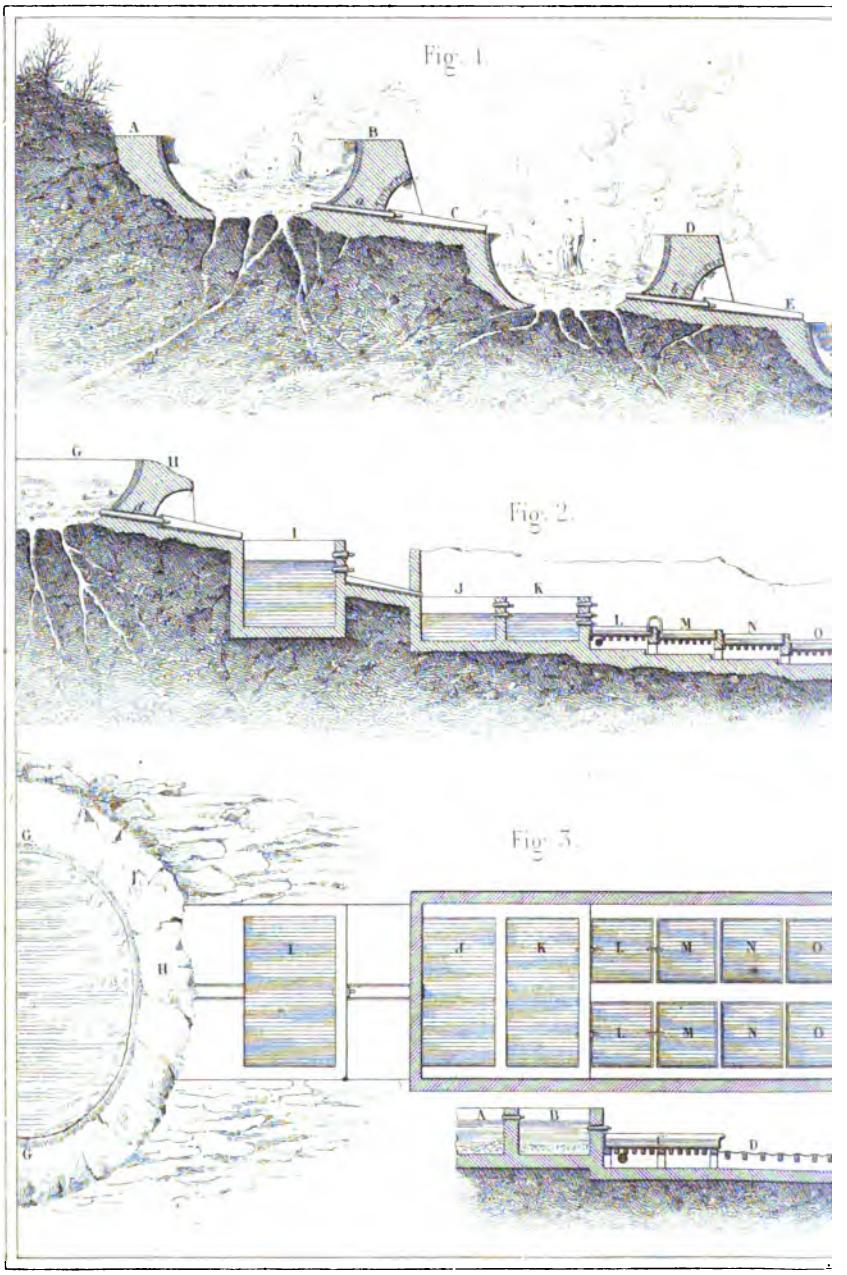


Fig. 13.





Payen del.

Librairie ... fi

Fig. 8

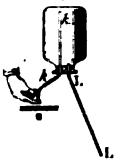
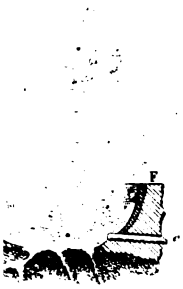


Fig. 7.



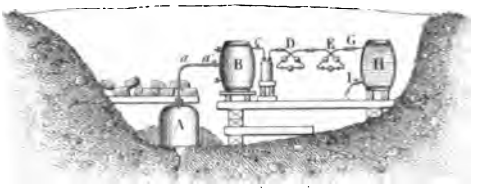
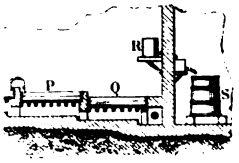


Fig. 4.



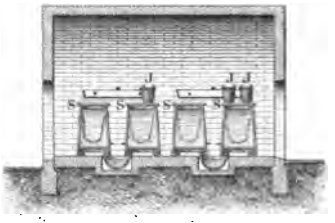
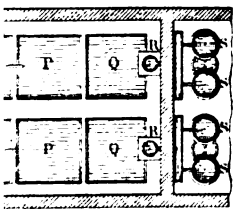


Fig. 5.



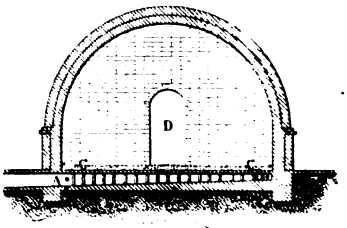


Fig. 6.

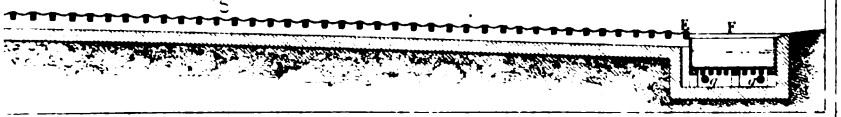


Fig. 1.
Vue extérieure.

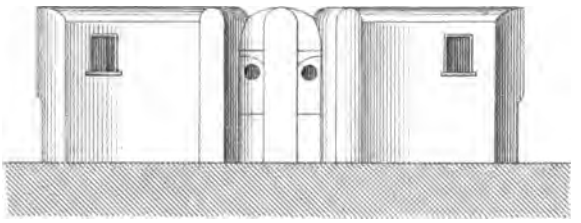
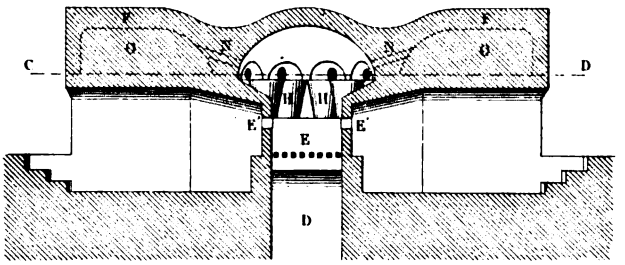
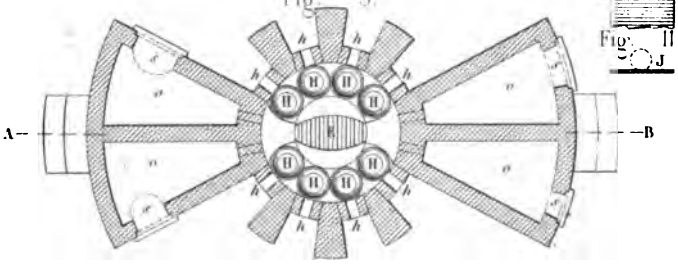


Fig. 2.
Four à Vitres à la Houille
Coupe suivant A. B.



Coupe suivant C. D.



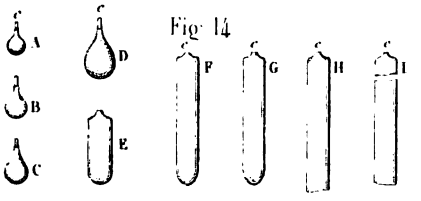
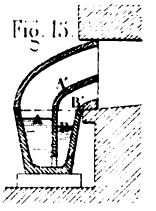


Fig. 14

Fig. 15.



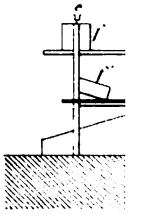


Fig. 3.

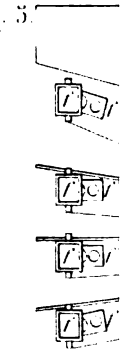
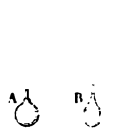
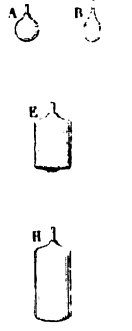


Fig. 11.





Verres à Vitres au bois.

Fig. 4.

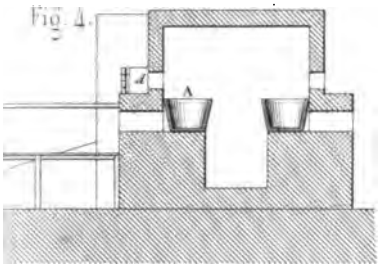
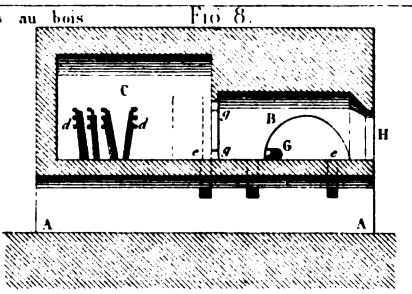


Fig. 8.



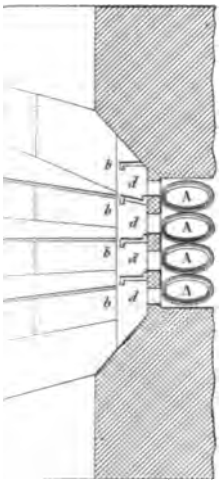


Fig. 6.

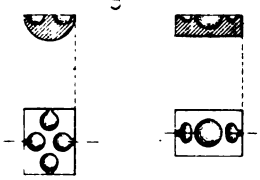


Fig. 7.

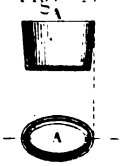
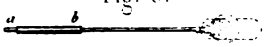


Fig. 9.



Fabrication du Verre en Tables.

Fig. 12.

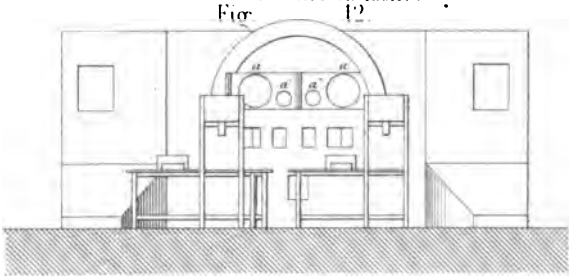


Fig. 10.

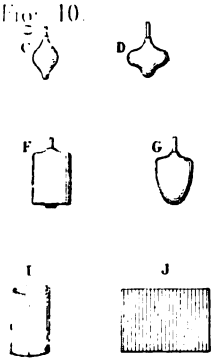
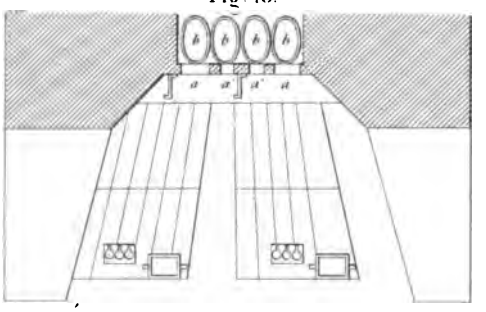
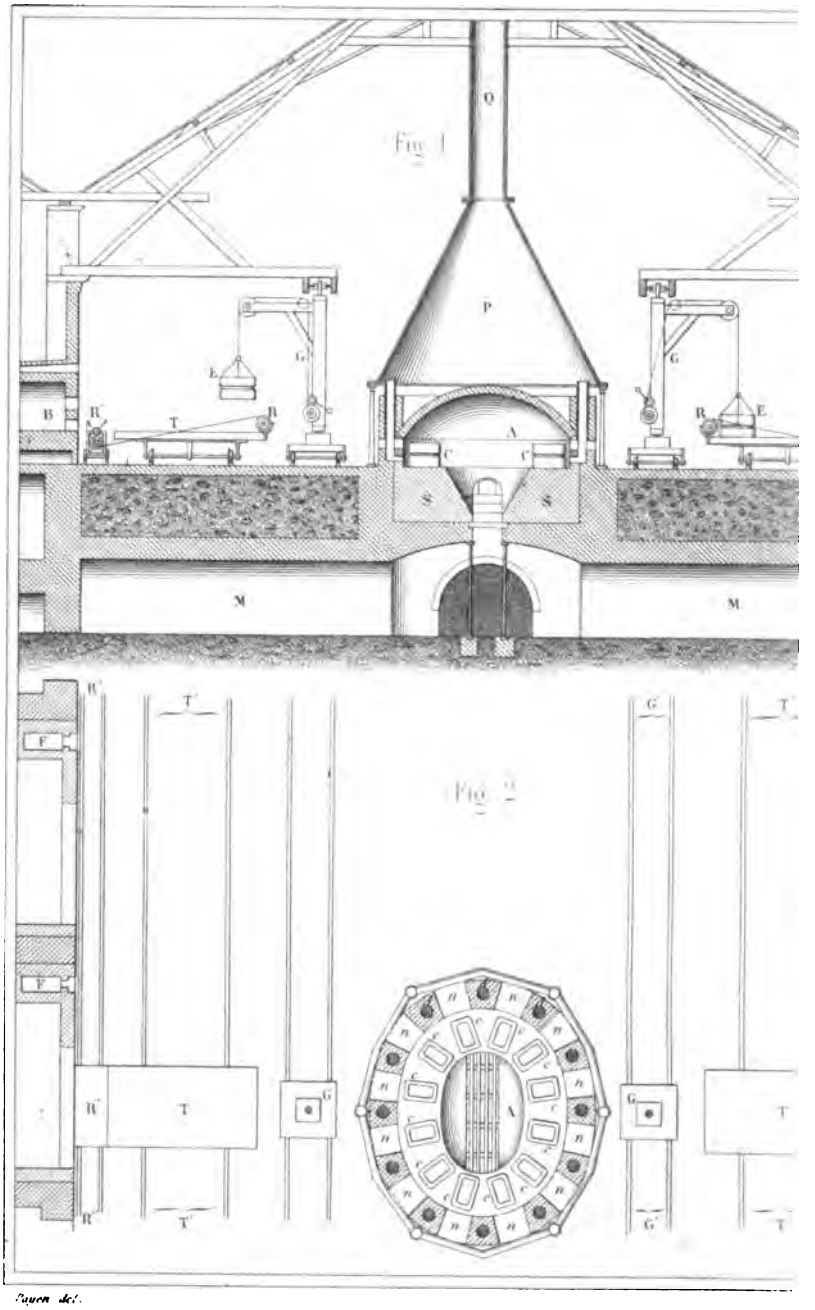


Fig. 13.



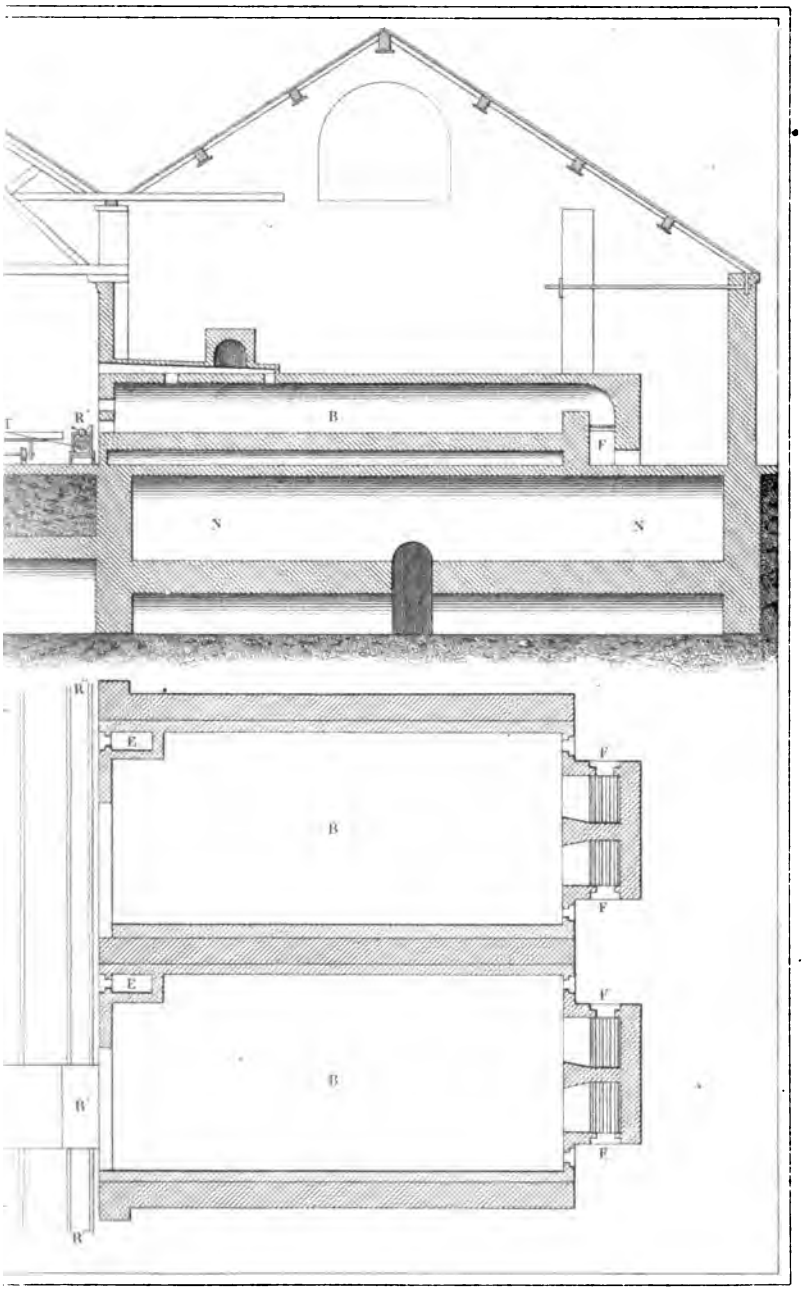
J. Pennelier et L. Chammont sc.

CHETTE et Cie



Payen del.

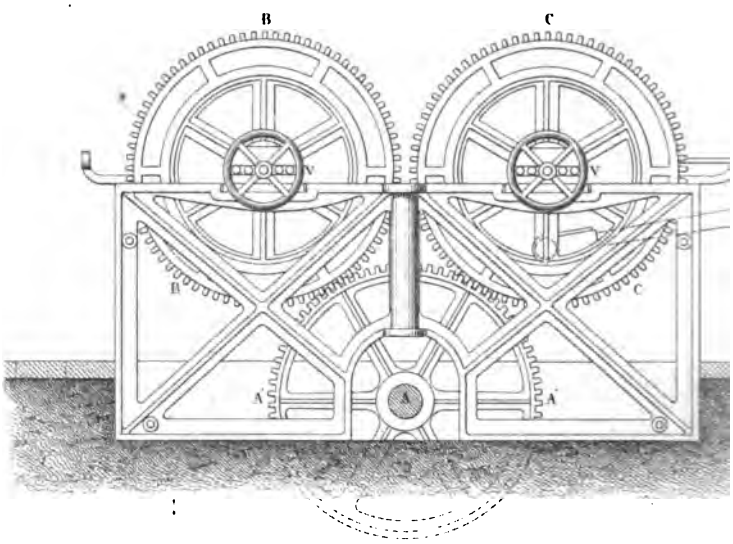
Librairie



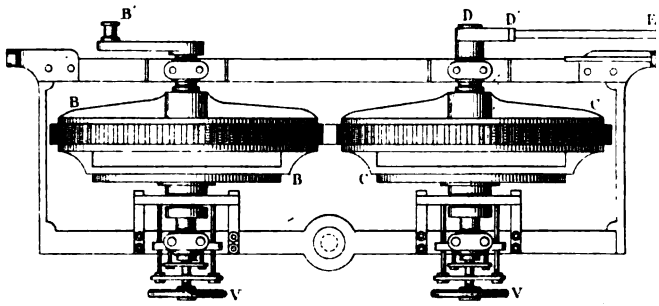
HETTE et Cie

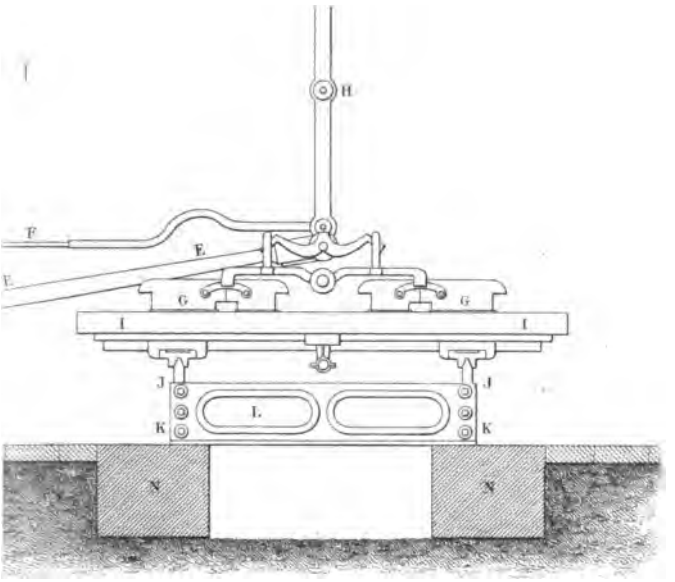
J. Petitcolin et L. Chaumont sc

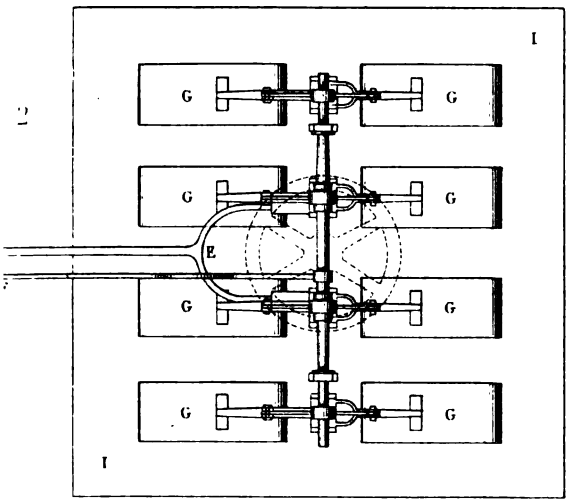
Fi



Fi



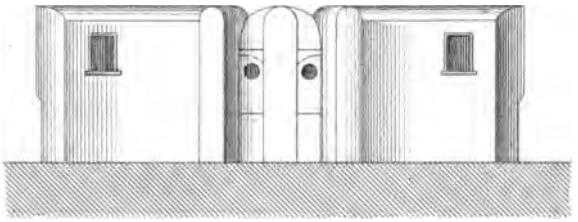




HETTE et Cie

J. Petitcolin et L. Chaumont sc.

Fig. 1.
Vue extérieure.



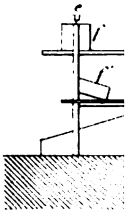


Fig. 2.
Four à Vitres à la Houille.
Coupe suivant A. B.

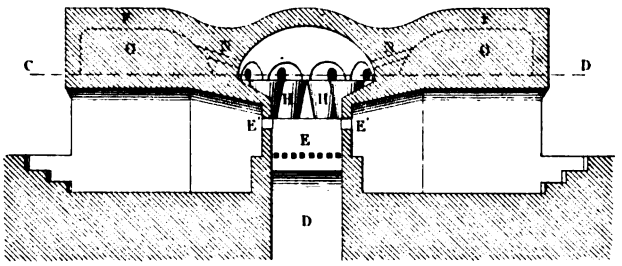
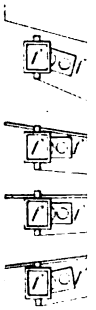


Fig. 5



Coupe suivant C. D.

Fig. 3.

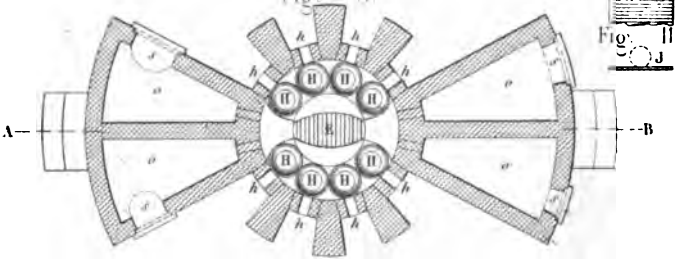
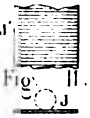
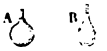


Fig. 11.





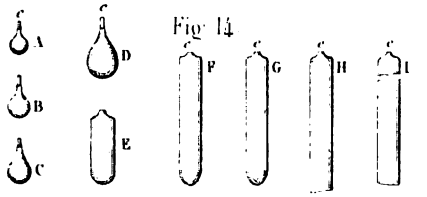
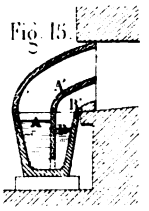


Fig. 14

Fig. 15.



Paquen del.

Librairie

Verres à Vitres au bois.

Fig. 4.

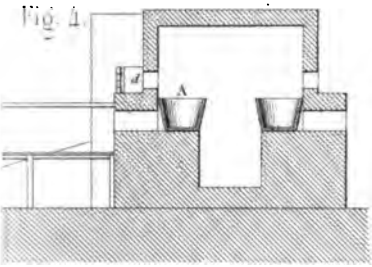
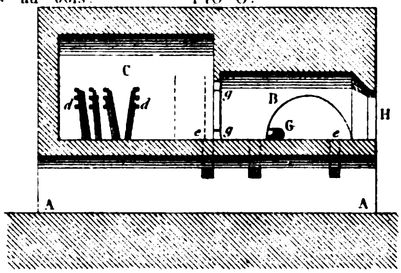


Fig. 8.



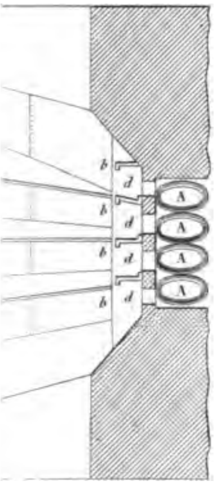


Fig. 6.

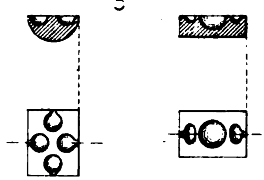


Fig. 7.

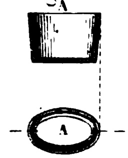


Fig. 9.

Fabrication du Verre en Tables.

Fig. 12.

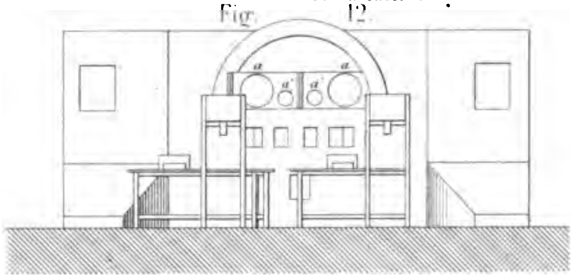


Fig. 10.

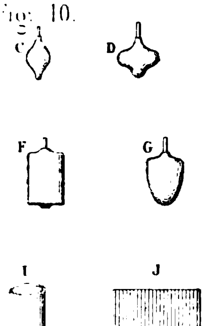
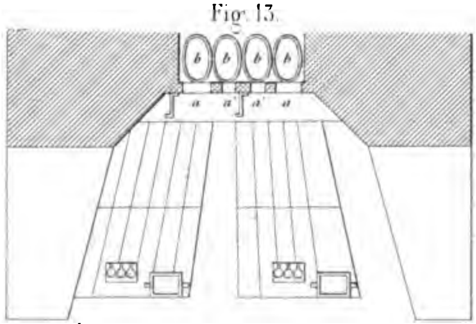


Fig. 13.



J. Petitcolin et L. Chaumont sc.

ACHETTE et Cie

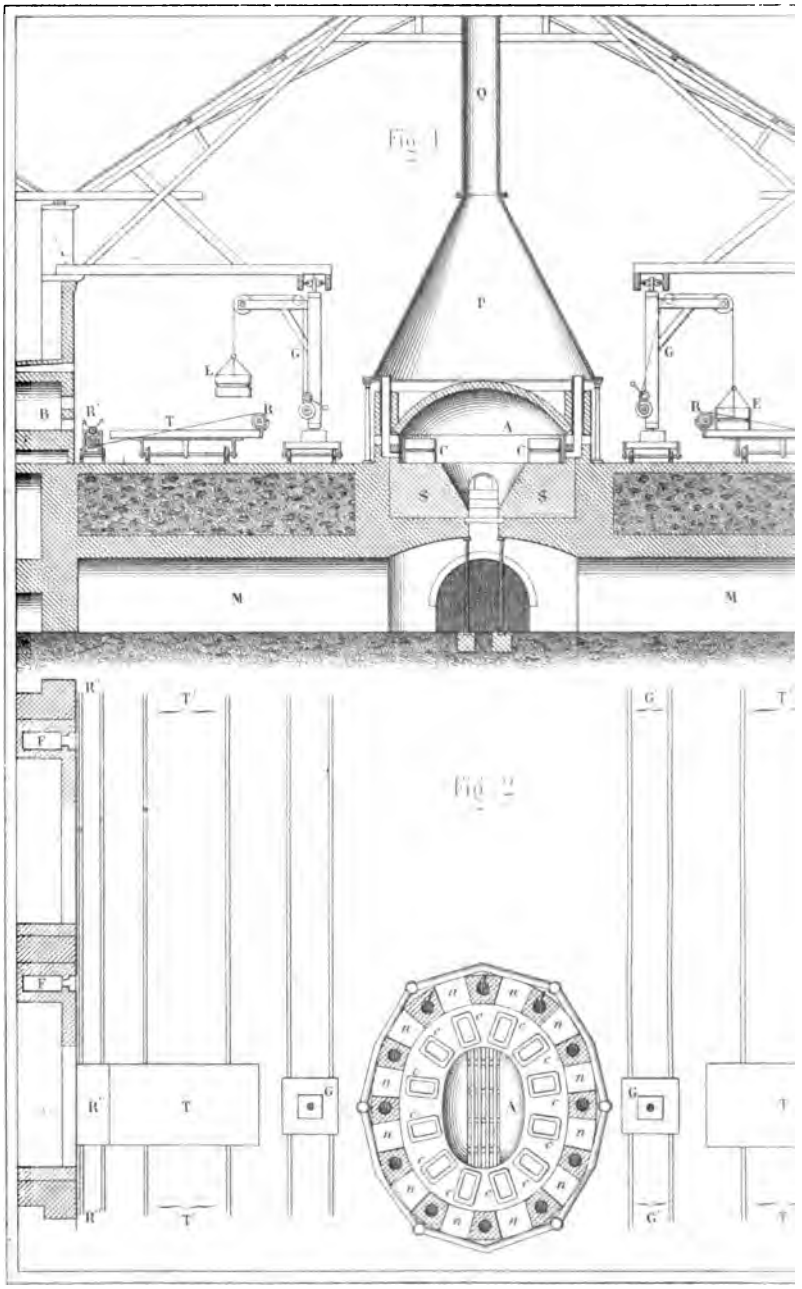
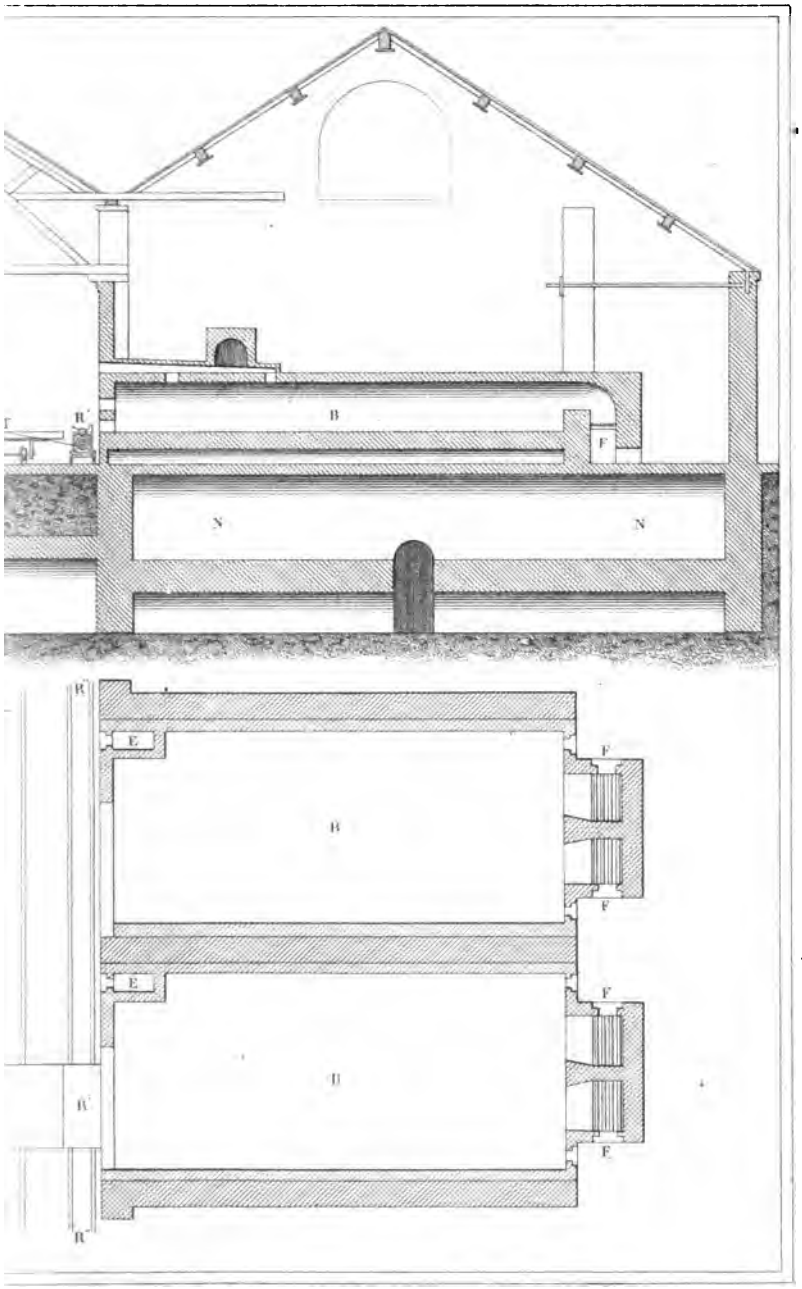


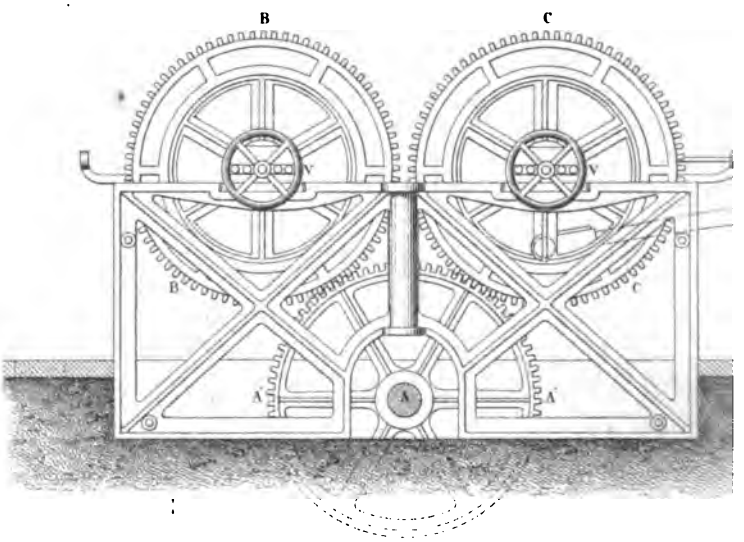
Fig. 1
Fig. 2
Payen del.



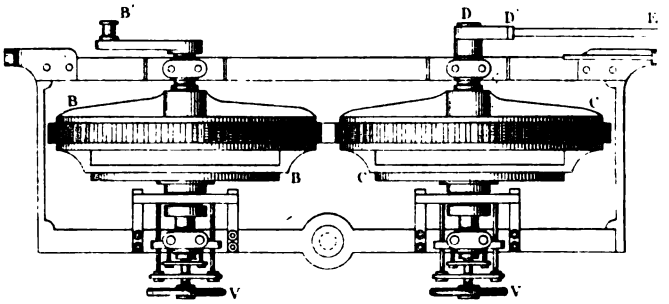
J. Petitcolin et L. Chamment sc

HETTE et Cie

Fi

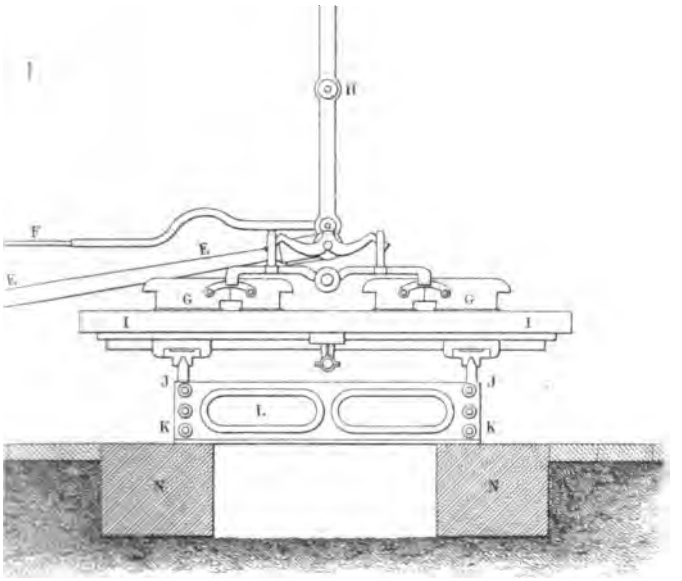


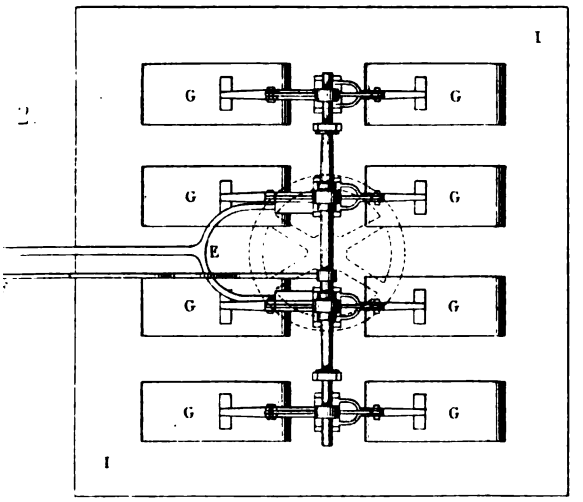
Fi



Cayen del

Librairie





MIETTE et Cie

J. Penicaud et L. Chaumont sc

Four à Cristal... au Bois

Fig. 1 ... extérieure

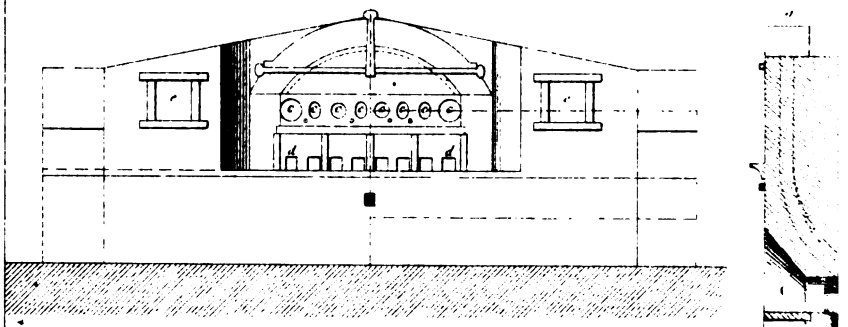


Fig. 2.

Coupe suivant A B

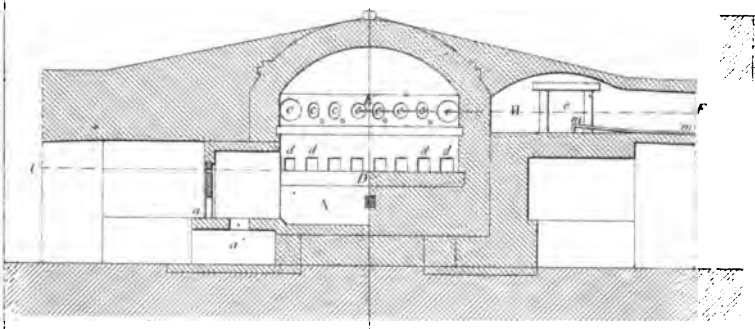
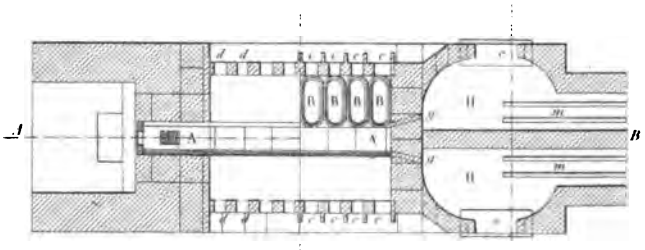


Fig. 3.

Coupe suivant C D E F



Four à Cristal à la Houille

Fig. 4.

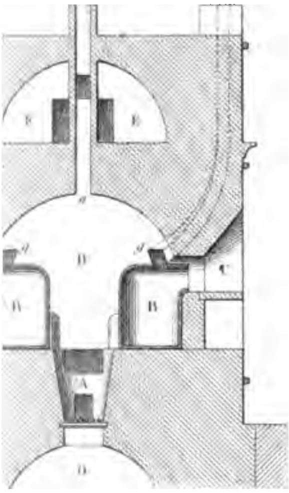


Fig. 5.

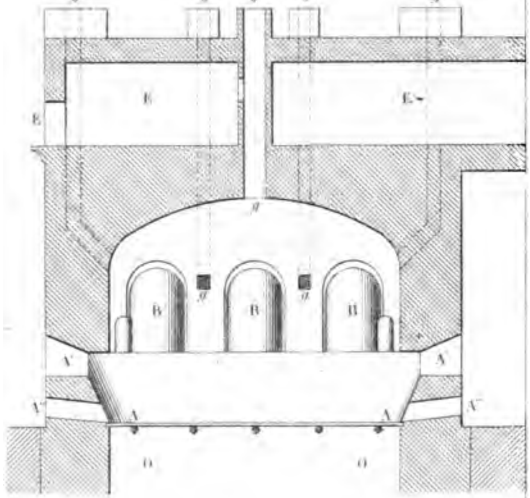


Fig. 7.

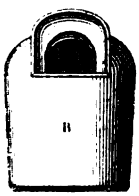


Fig. 6.

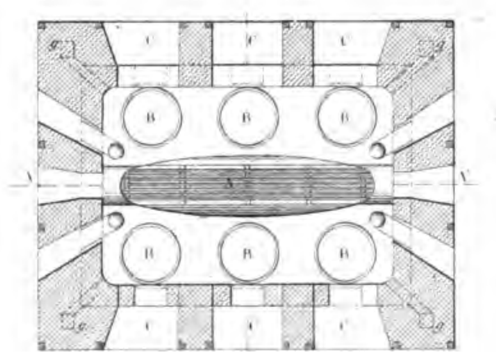


Fig. 8.

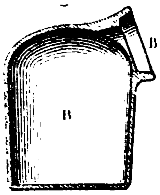


Fig. 1

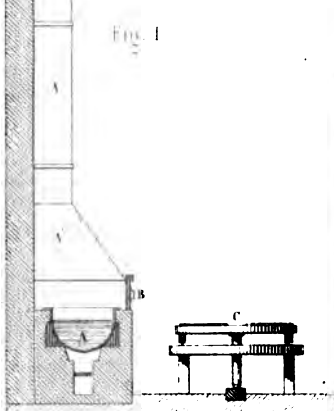


Fig. 2

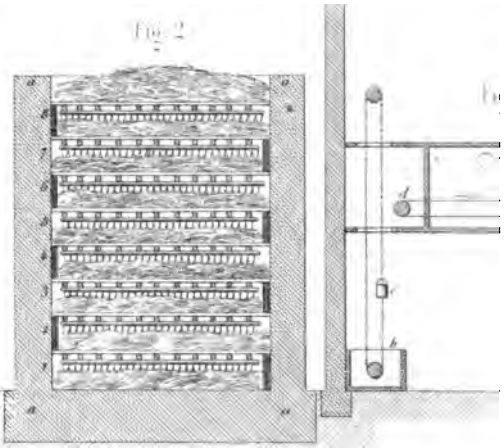
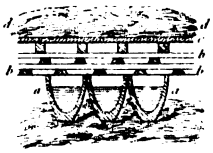


Fig. 3

Fig. 4



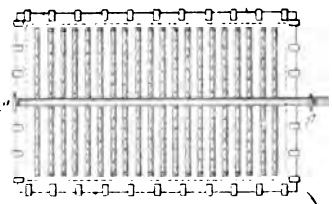
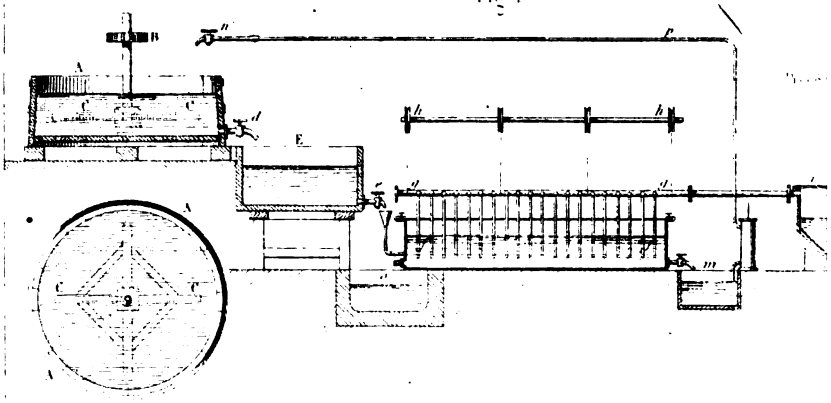
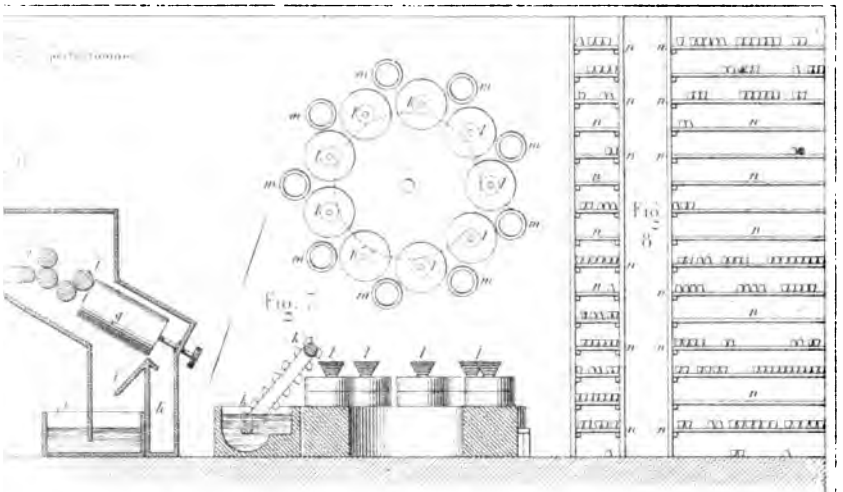
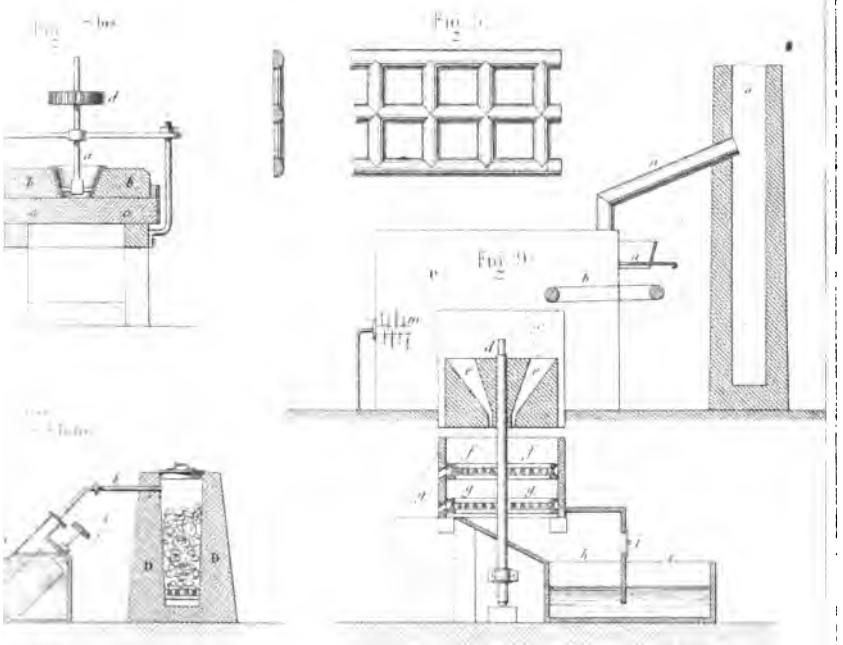


Fig. 10







Pettenkofen et L. Chaumont

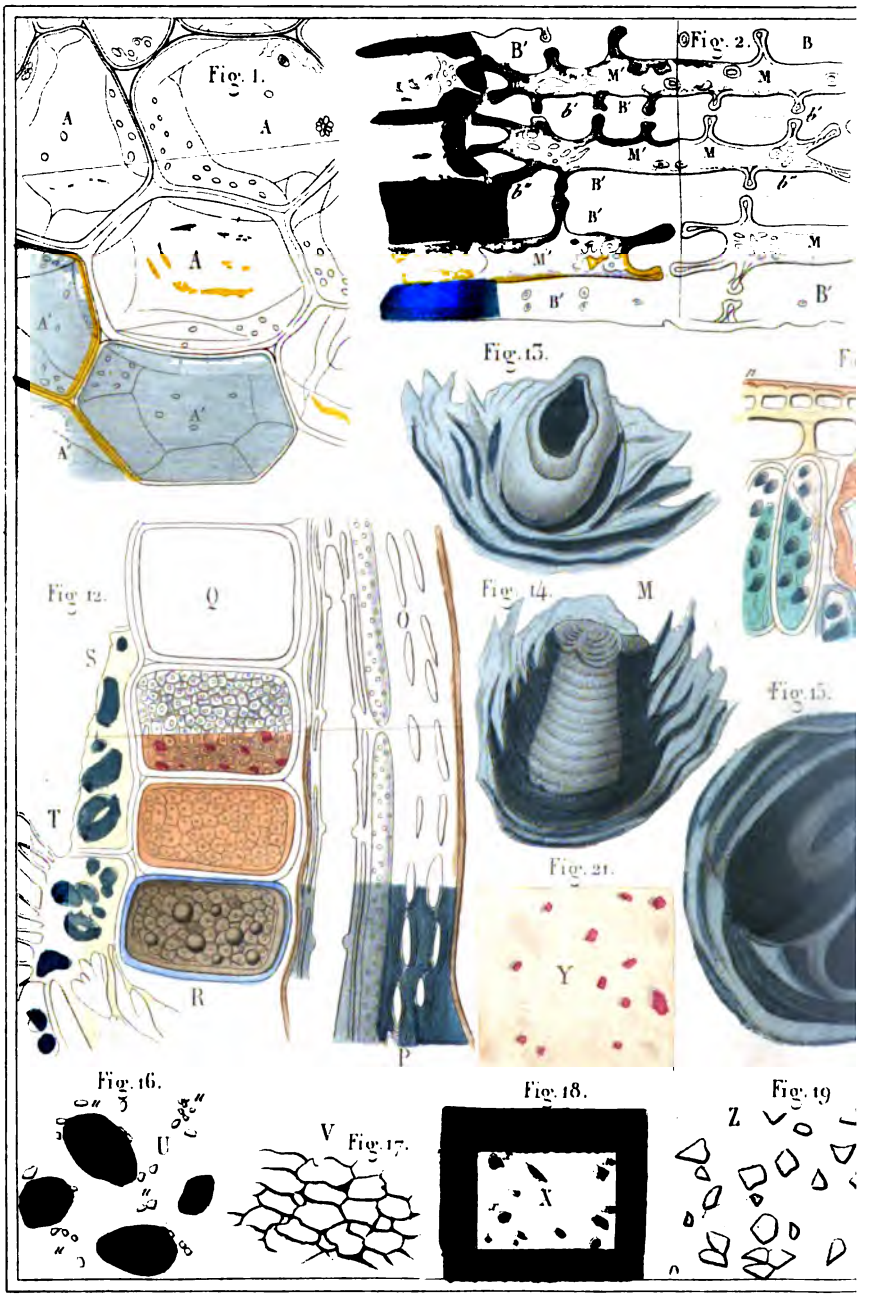


Fig. 1.
A
A
A
A'
A'
A'
Fig. 2.
B
B'
M'
M
b'
b''
Fig. 13.
Fig. 14.
M
Fig. 15.
Fig. 12.
Q
S
T
R
O
P
Fig. 21.
Y
Fig. 16.
U
Fig. 17.
V
Fig. 18.
X
Fig. 19
Z

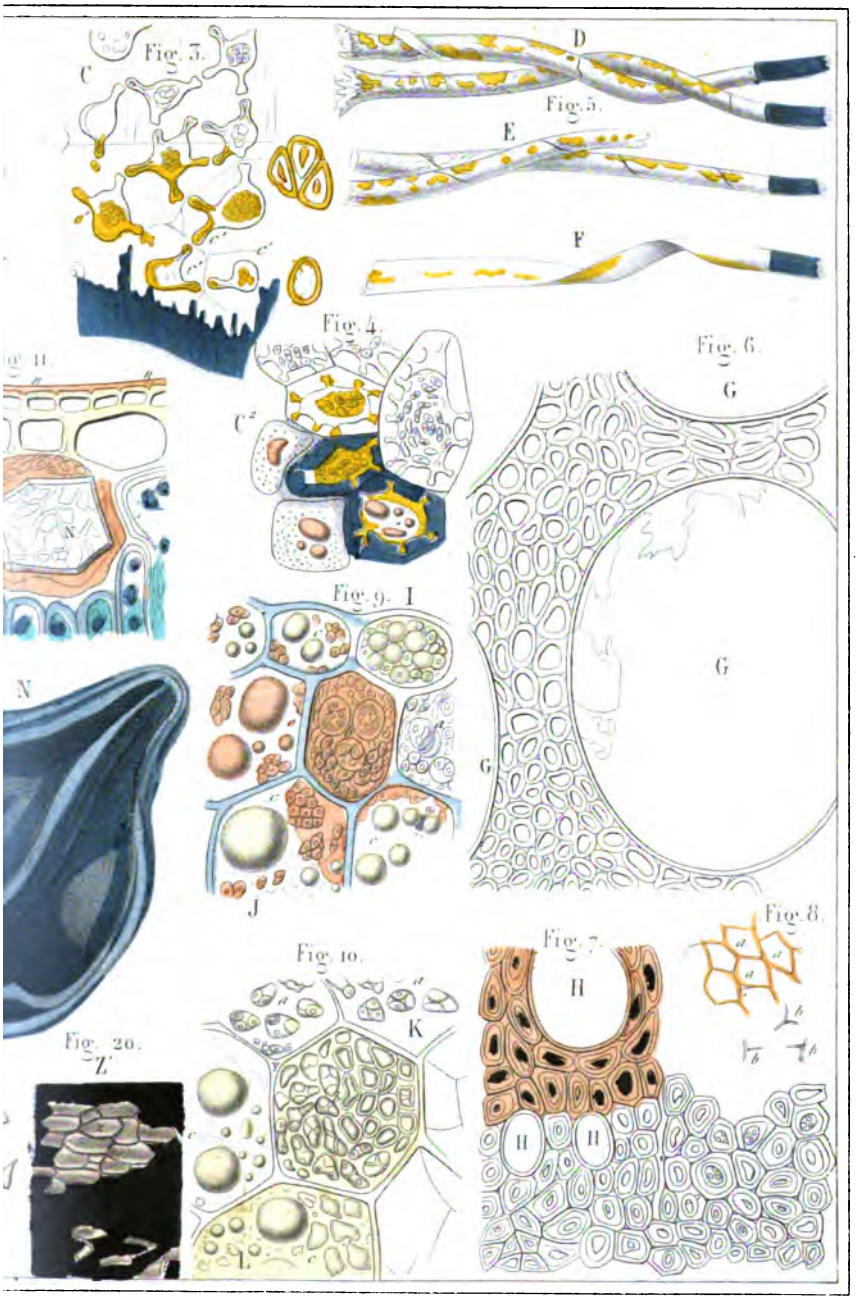
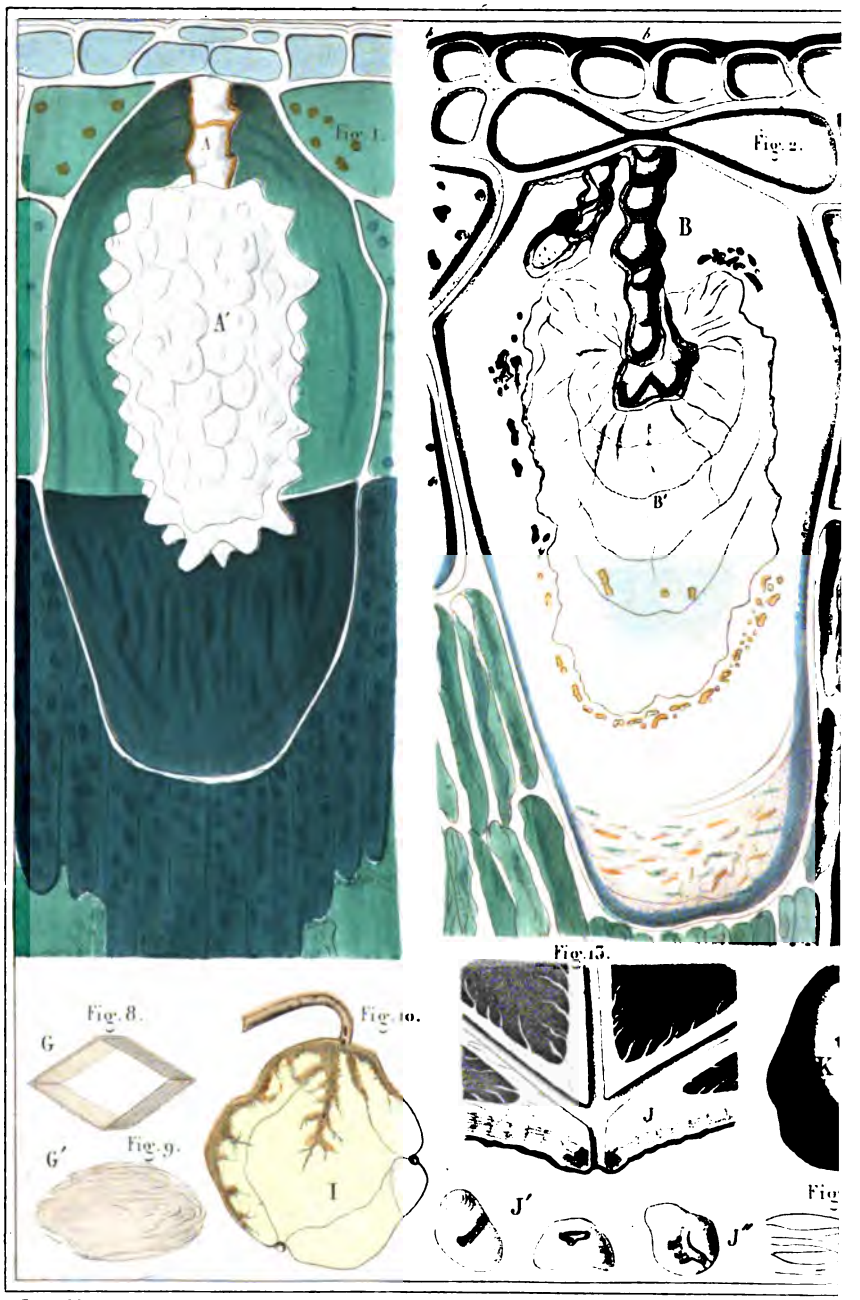
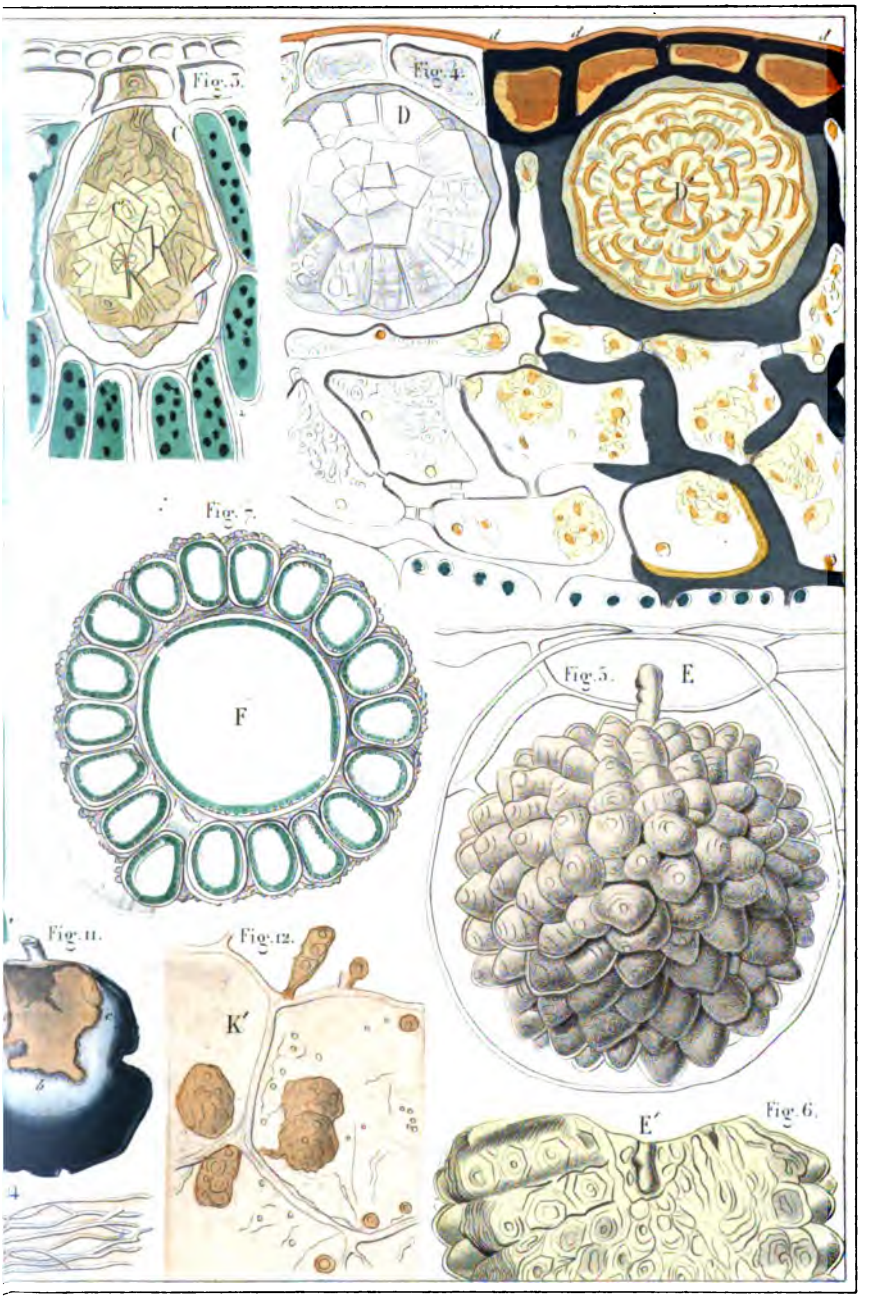


Fig. 3.
C
D
Fig. 5.
E
F
Fig. 4.
Fig. 6.
G
G
G
Fig. 9. I
J
N
Fig. 10.
K
L
Fig. 20.
Z
Fig. 7.
H
H
H
Fig. 8.

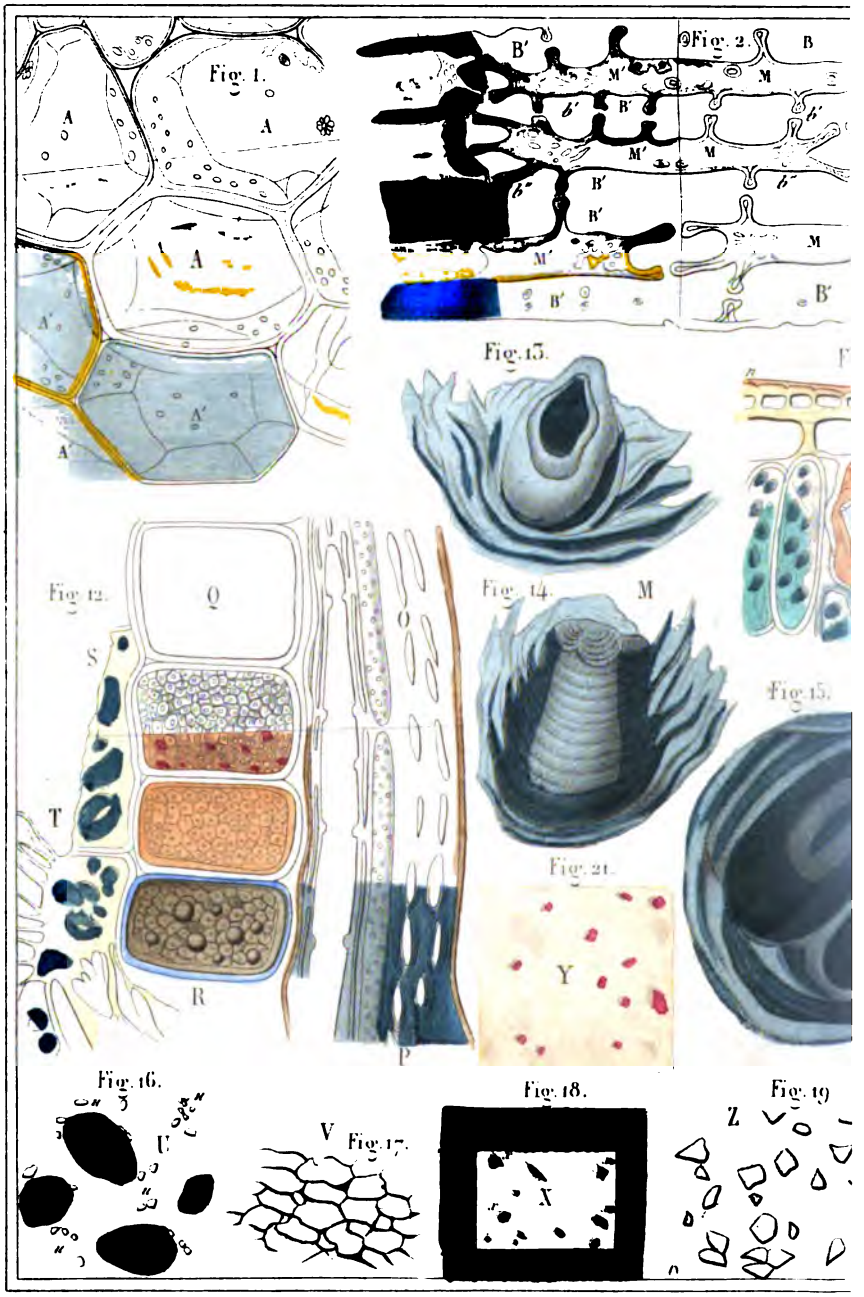


Payen del.

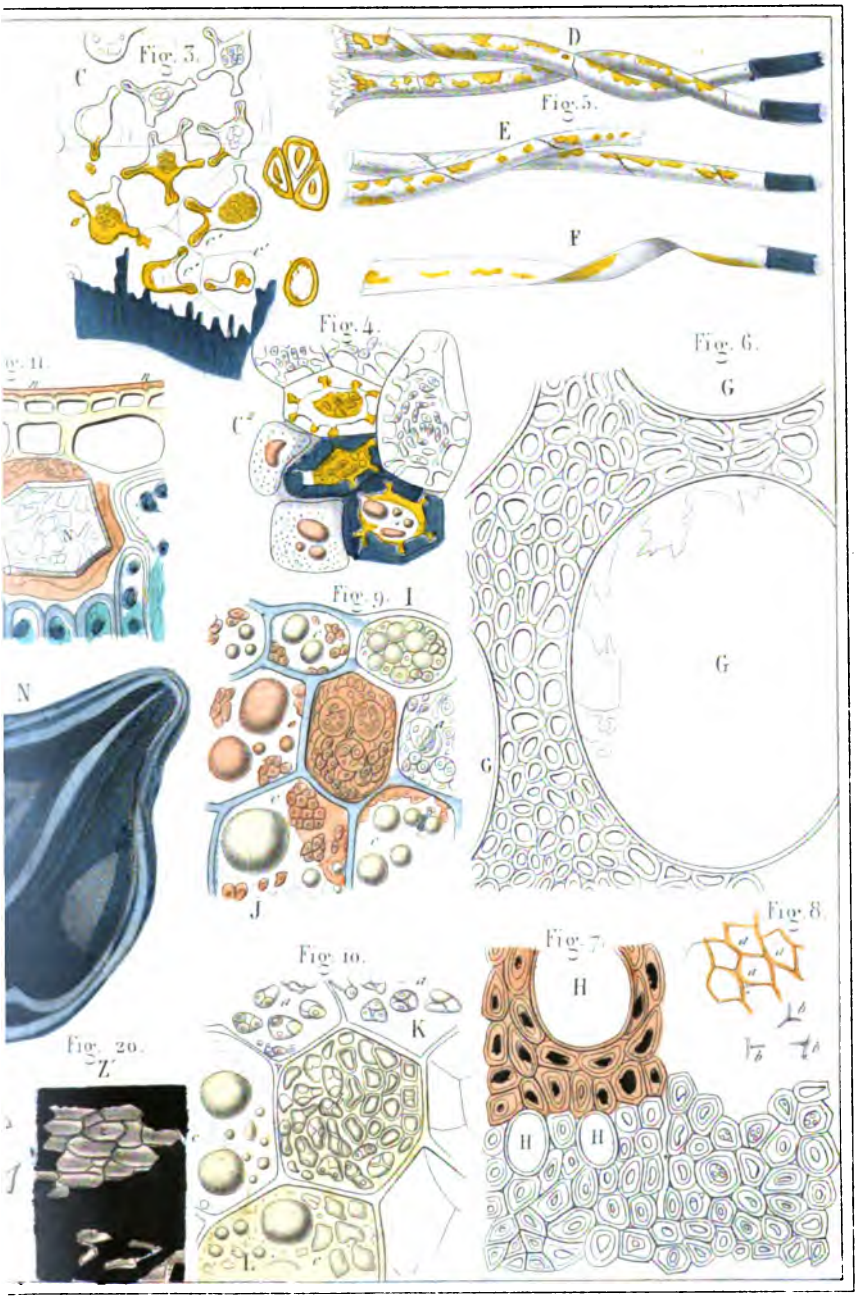
Librairie de



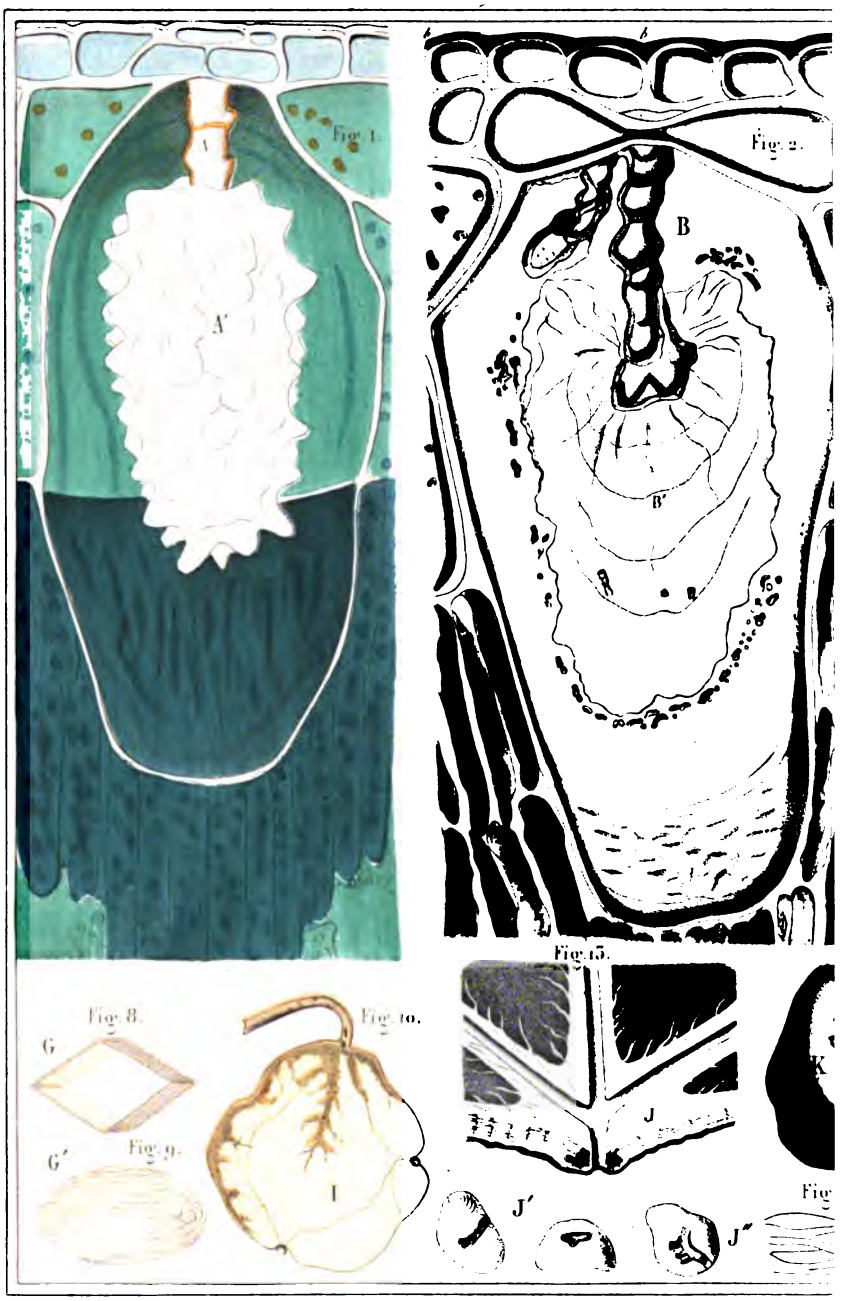
HACHETTE et Cie
E. Wernicke sc.



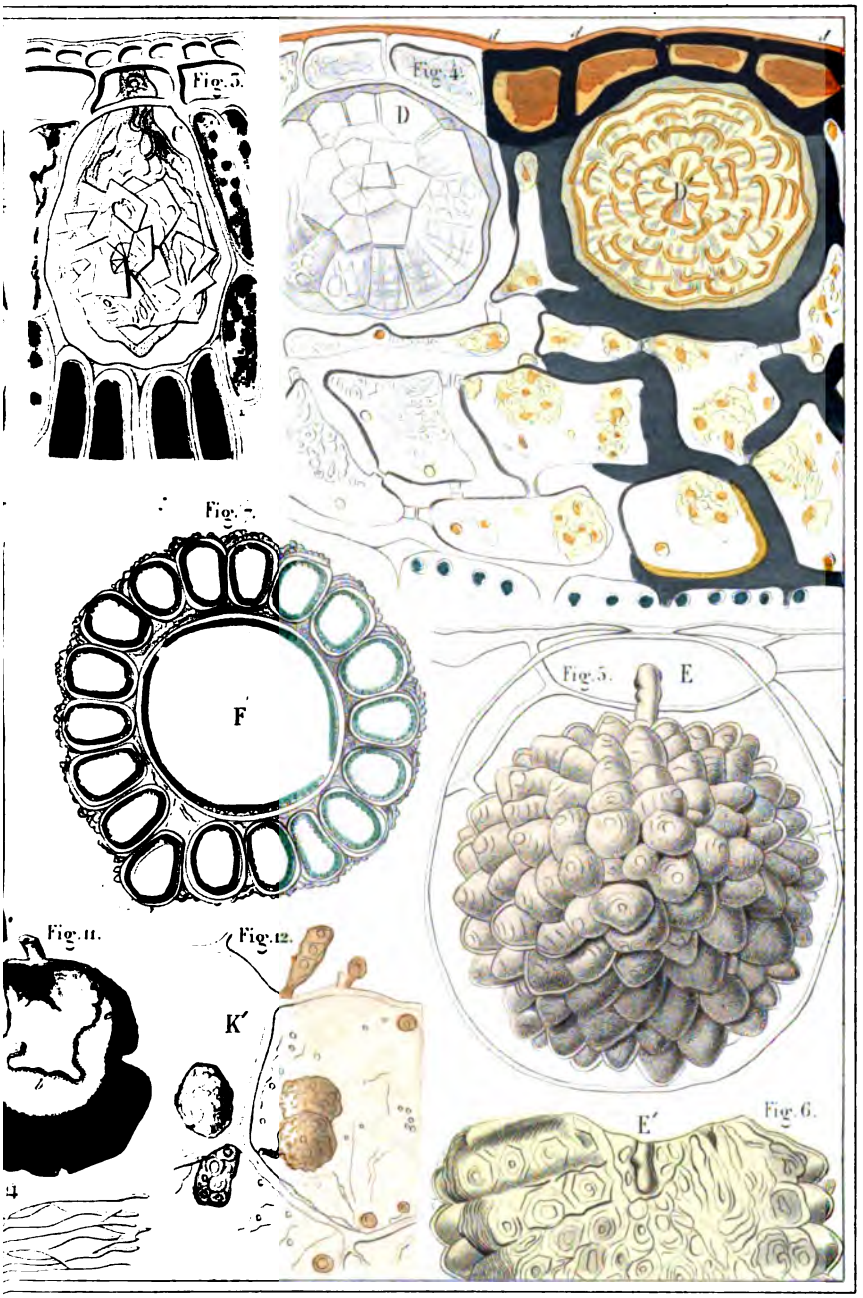
Peyen del. Librairie de L. H.



...ETTE et Cie E. Wormser sc



Payen del. Librairie de L



HACHETTE et Cie

E. Wermuth sc.

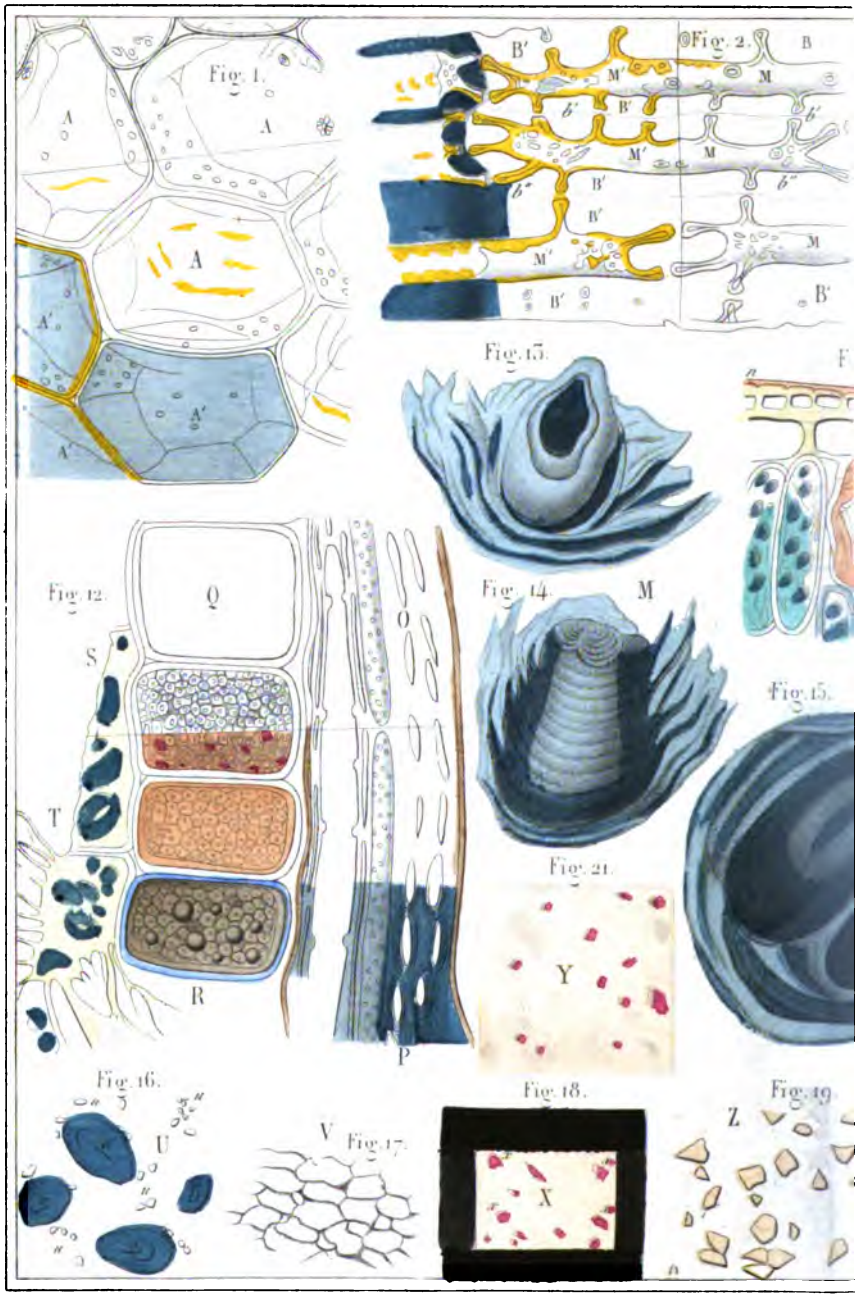
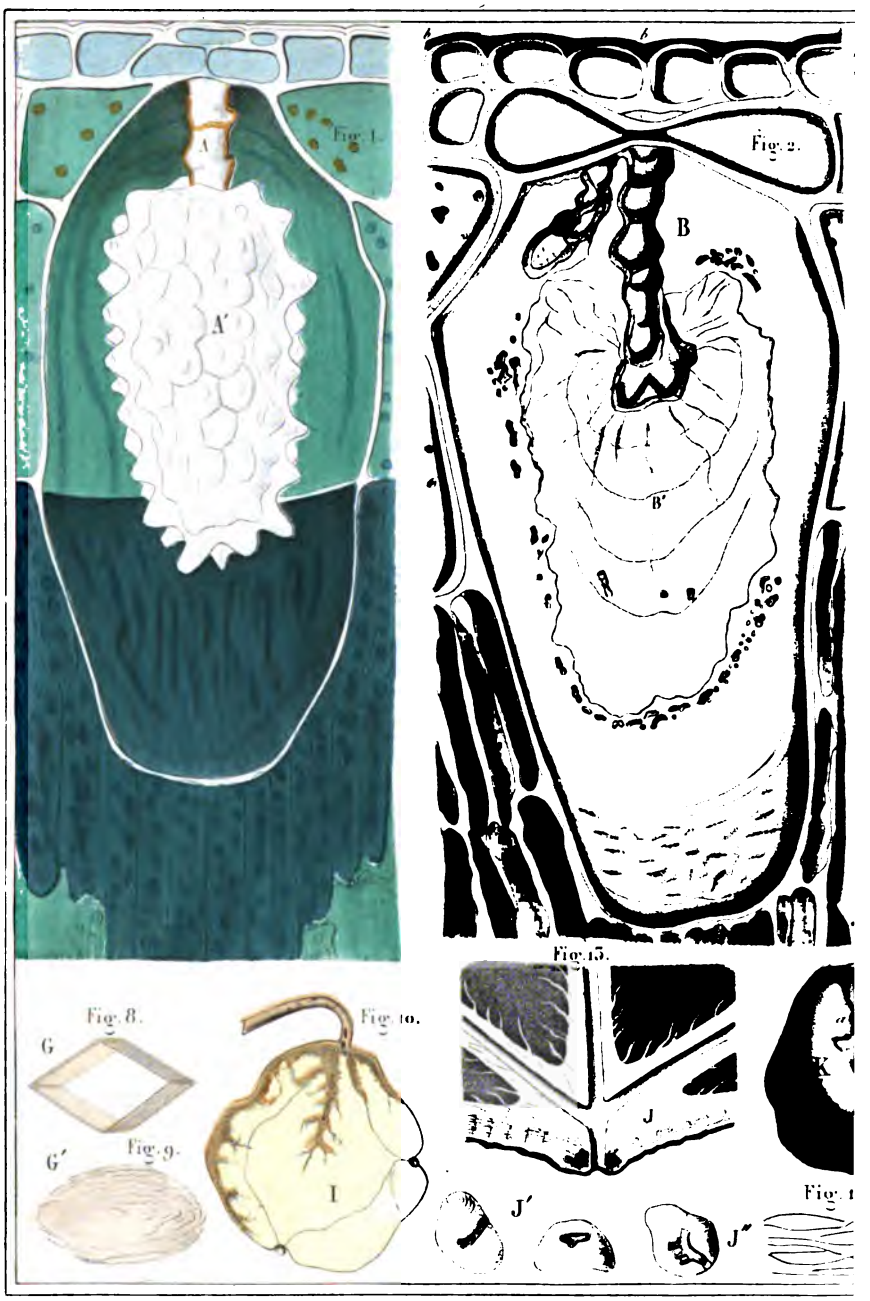


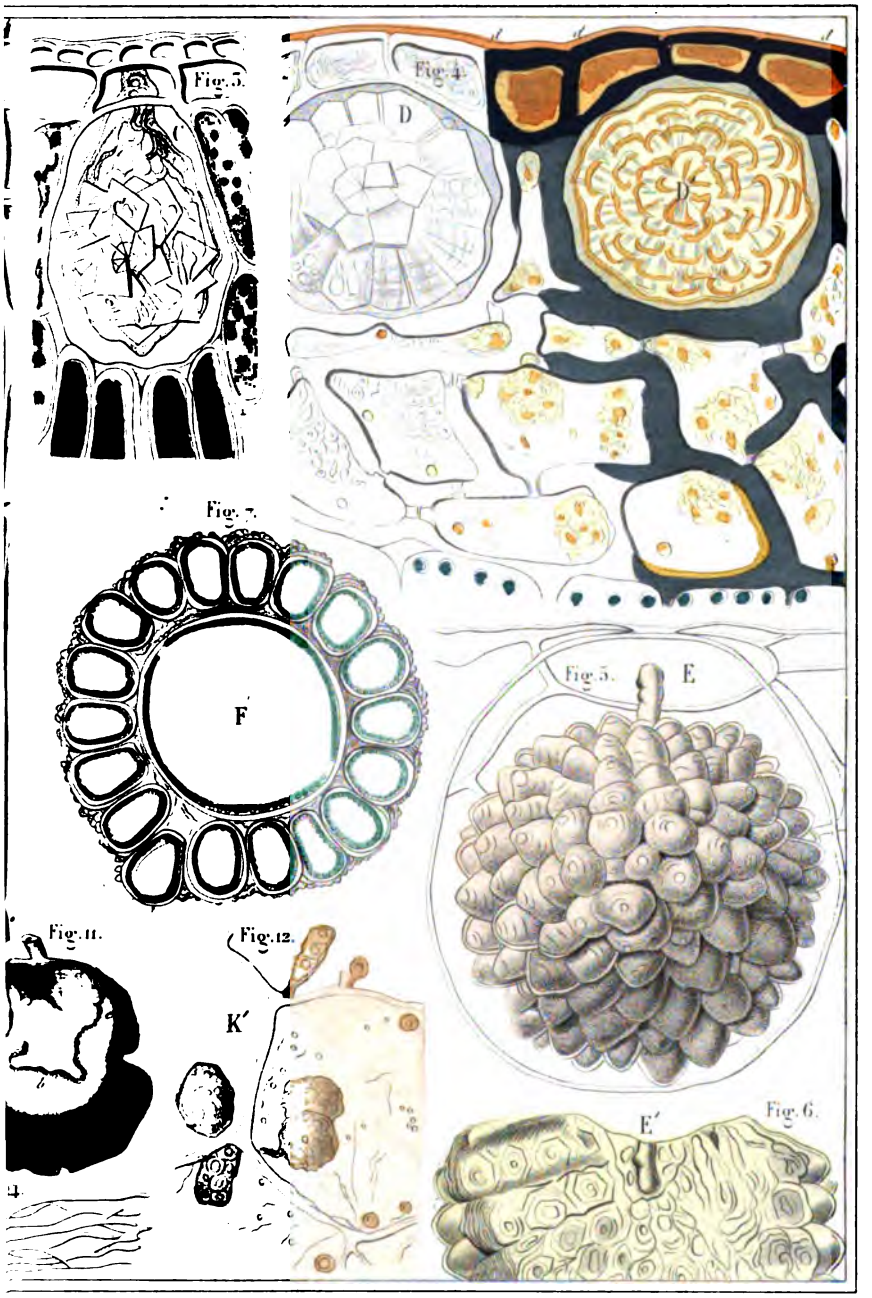
Fig. 1.
A
A
A
A'
A'
A'
Fig. 2.
B
B'
M'
M
b'
b''
Fig. 13.
Fig. 14.
M
Fig. 15.
Fig. 12.
Q
S
T
R
O
P
Fig. 21.
Y
Fig. 16.
U
Fig. 17.
V
Fig. 18.
X
Fig. 19.
Z

Imp. HACHETTE et Cie

E. Wormser sc.



Payen del. Librairie de L



HACHETTE et Cie

E. Wernert sc.

Fig. 1.

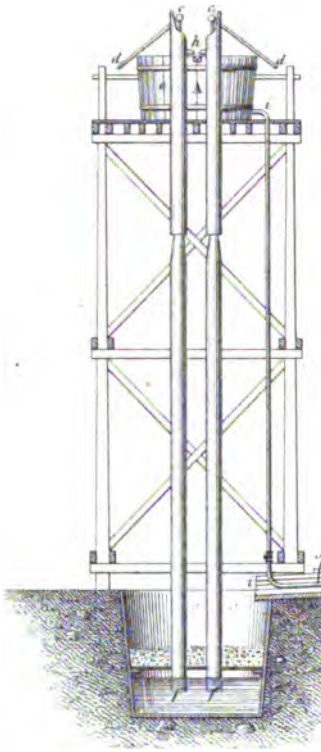


Fig. 16.

Fig. 17.

Fig. 15

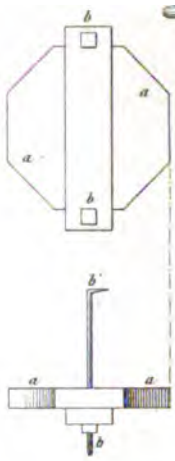


Fig. 10

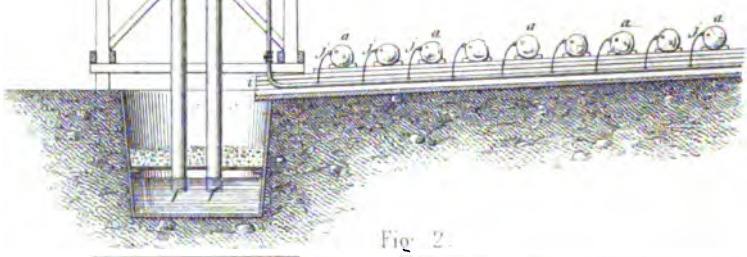
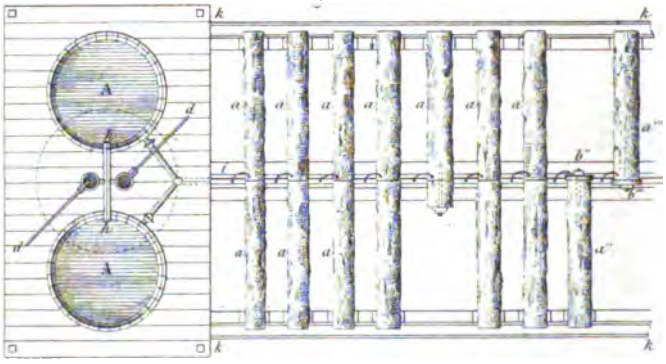


Fig. 2.



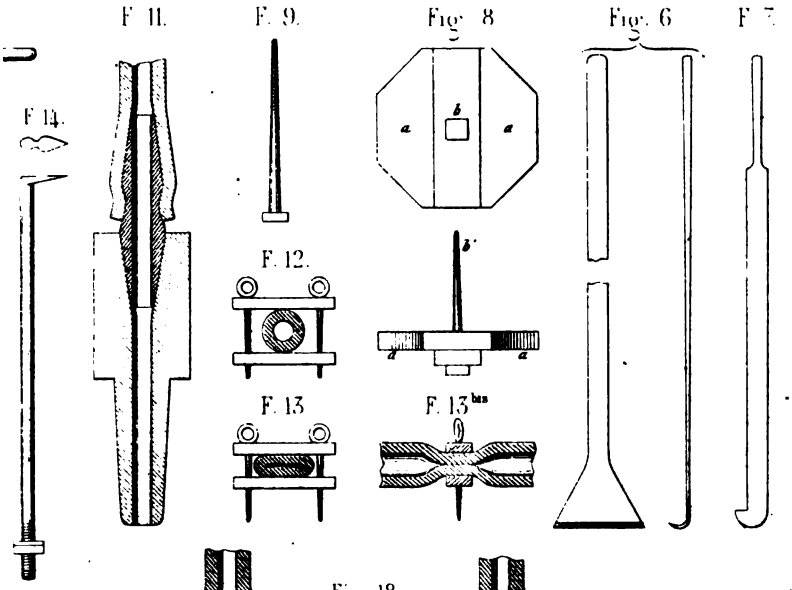


Fig. 18

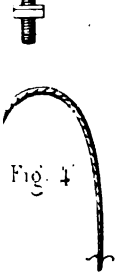
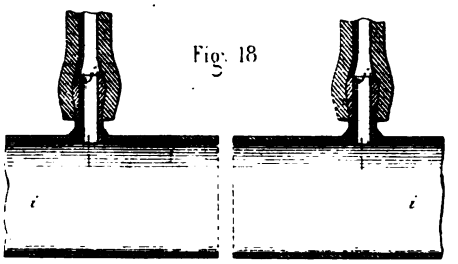


Fig. 4.



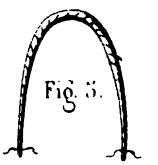


Fig. 5.

Fig. 3.

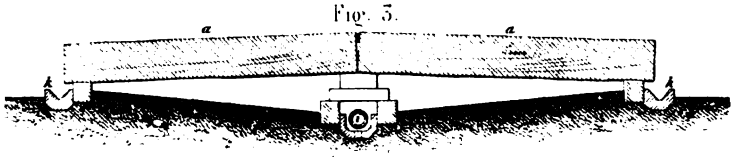
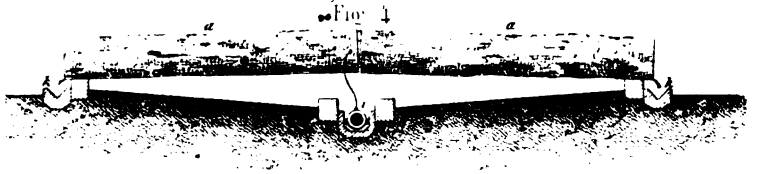
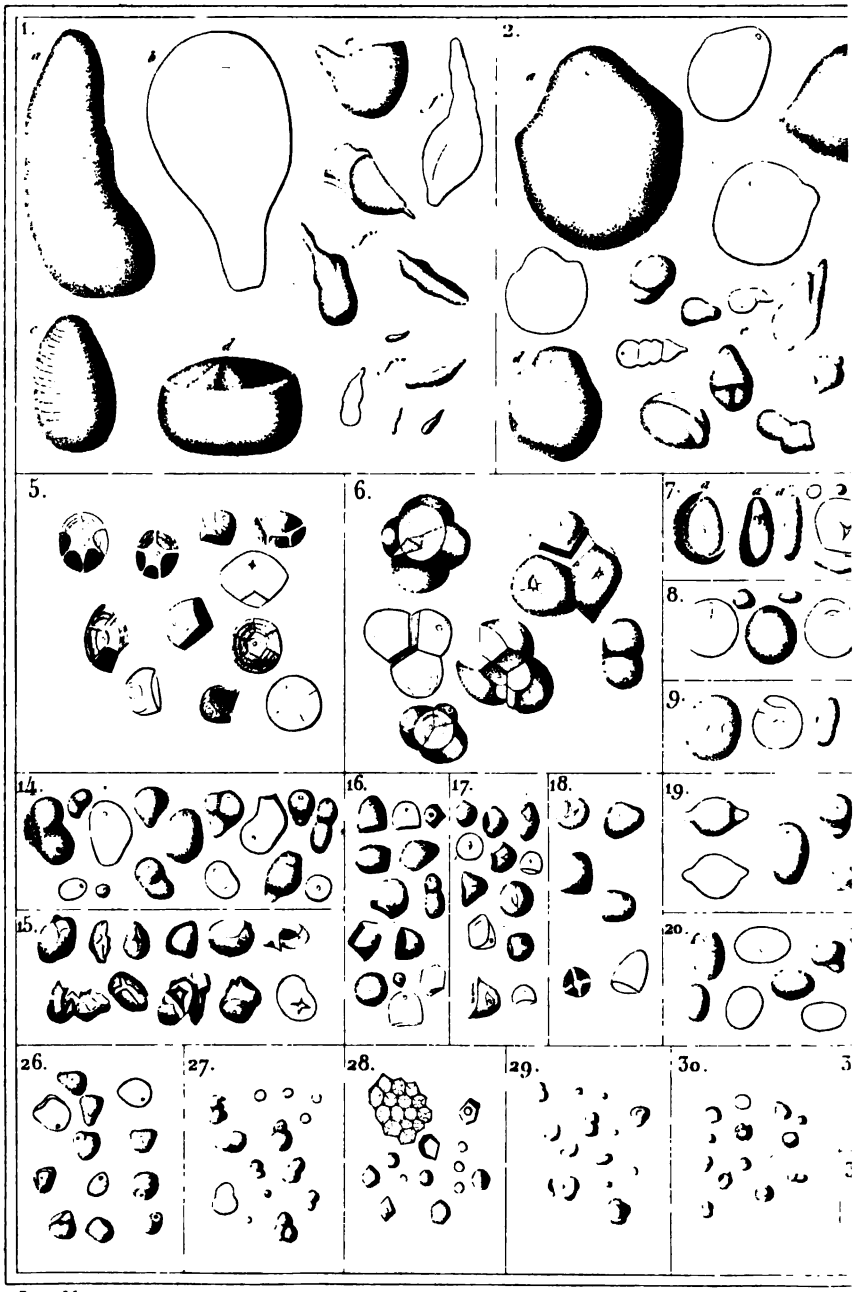


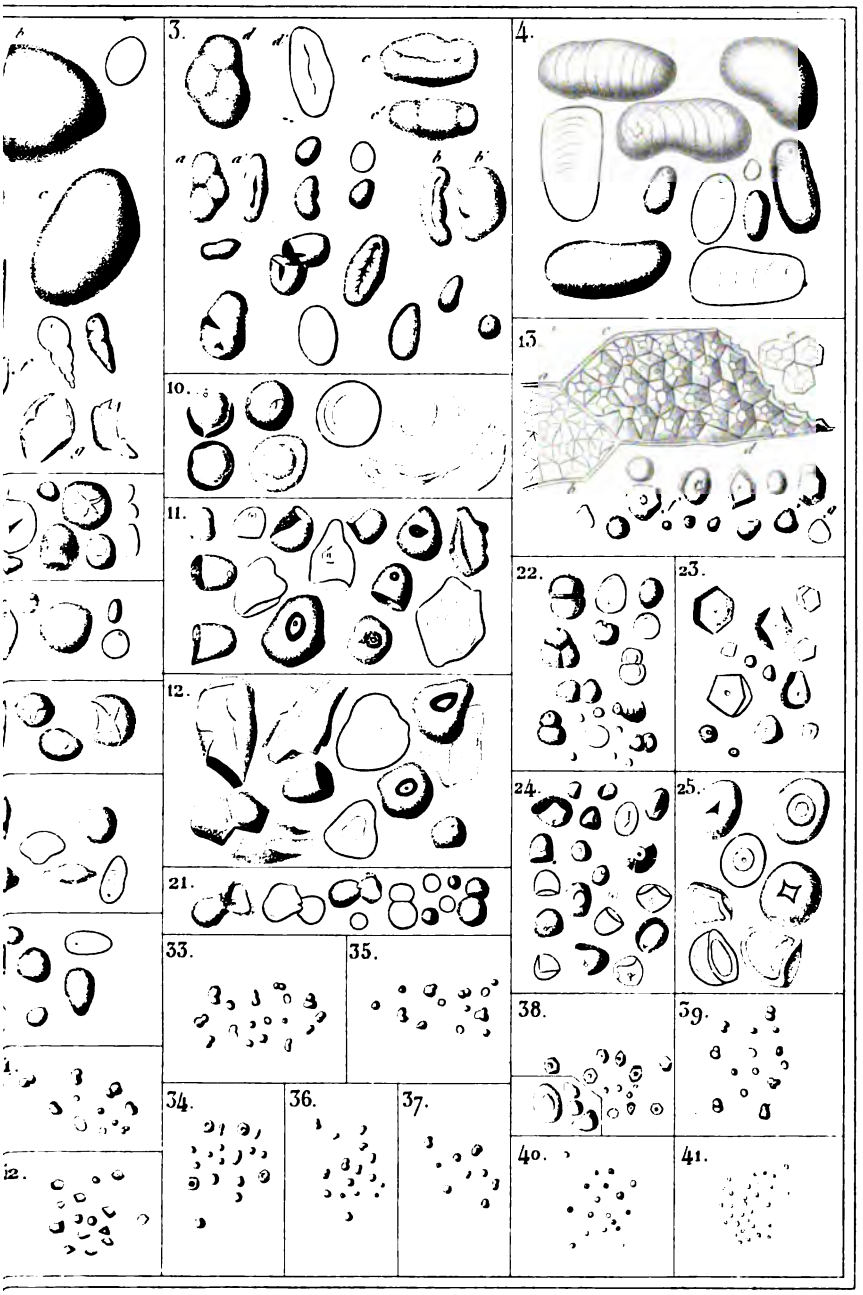
Fig. 1



HETTE et Cie
J. Petitcolin et L. Chaumont sc

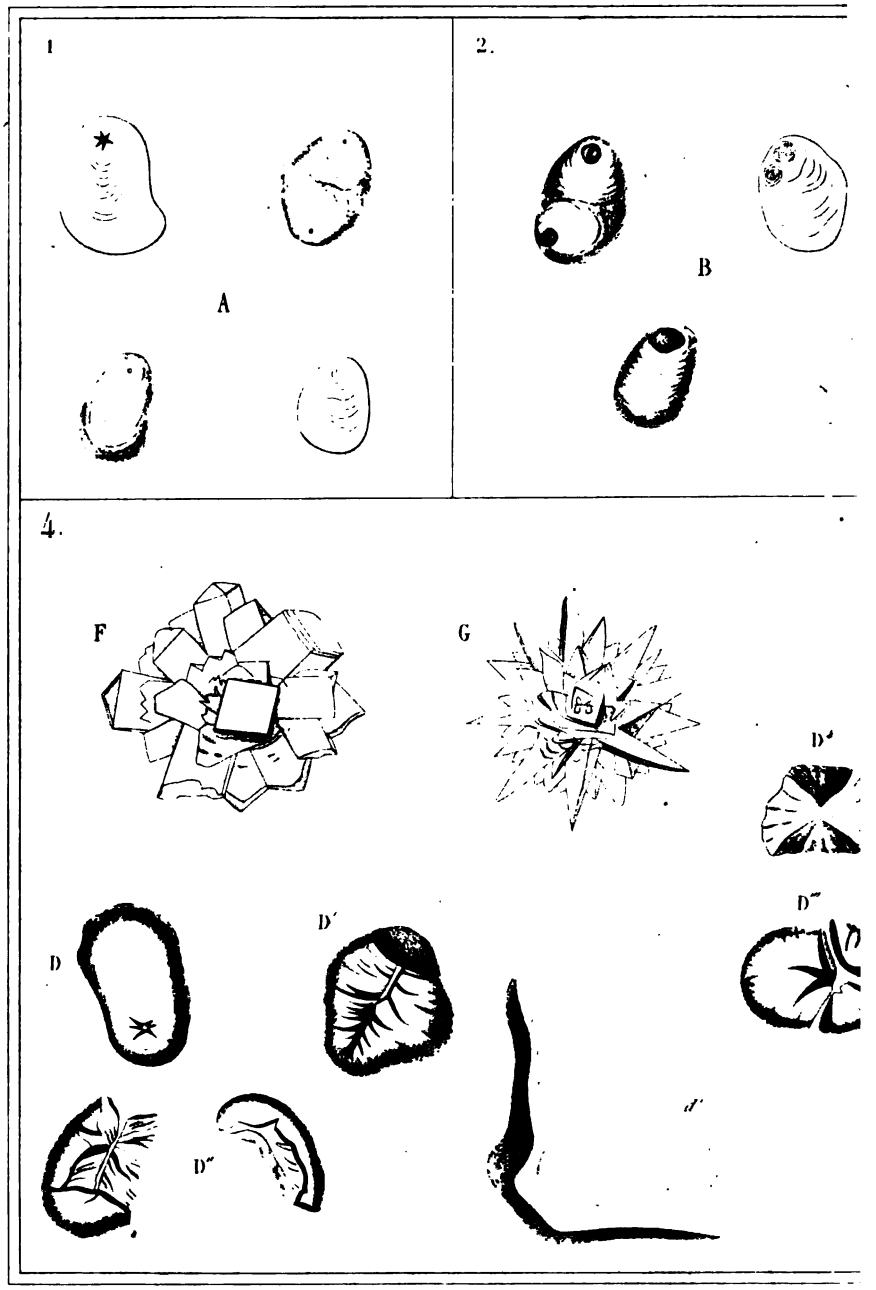


Payen del



HACHETTE et Cie E. Wormser sc

DIFFÉRENTS ÉTATS DE LA FÉCULE, CELLULES DE I



Payen del.

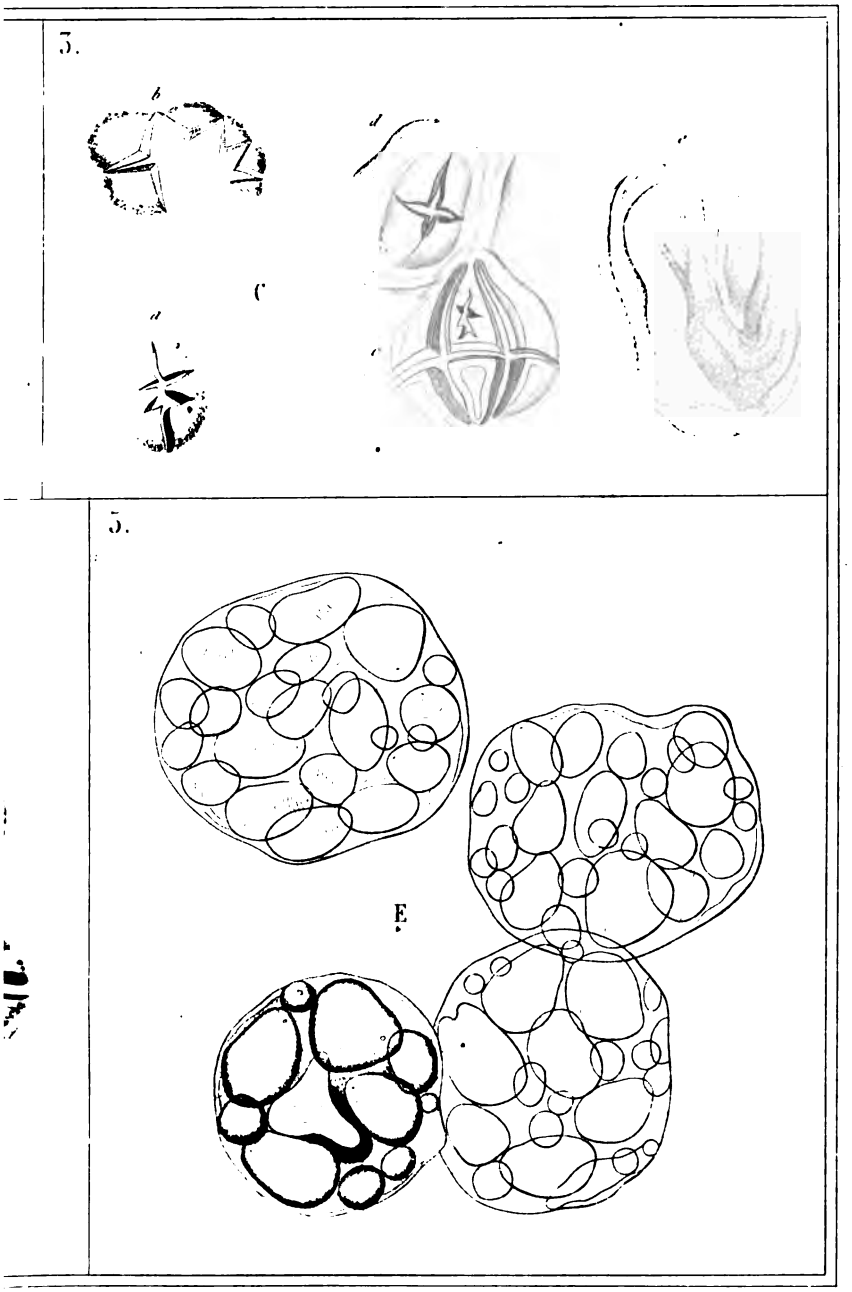

3.
b
C
d
d
c
c
5.
E

Fig. 3.

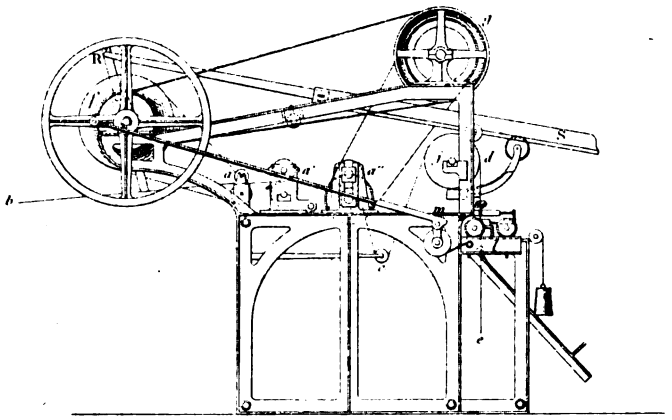
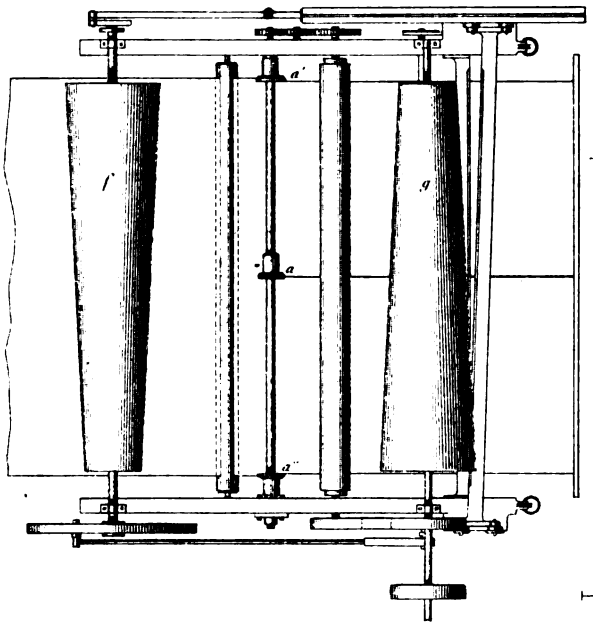
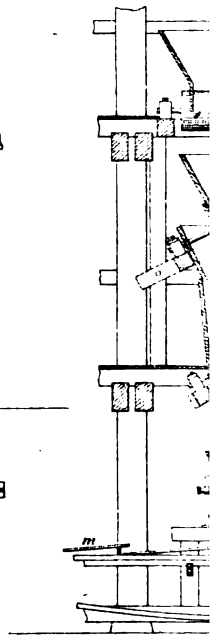
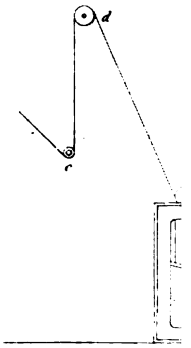


Fig. 4.







Ech pour Fig

Pauwen del.

Librairie —

Fig. 1.

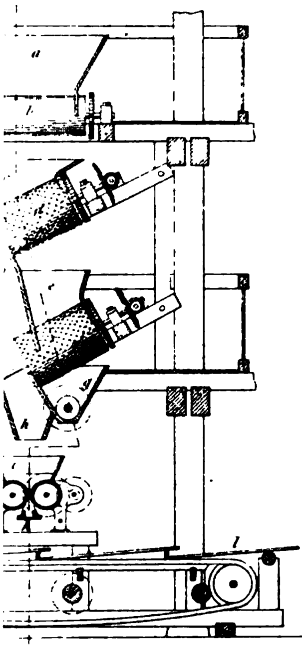


Fig. 2

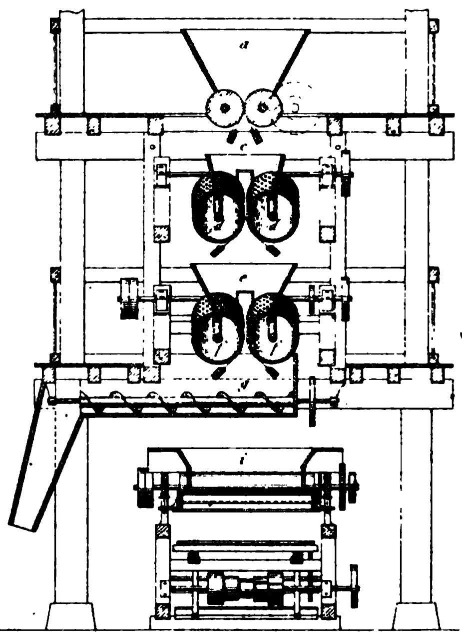


Fig. 3.

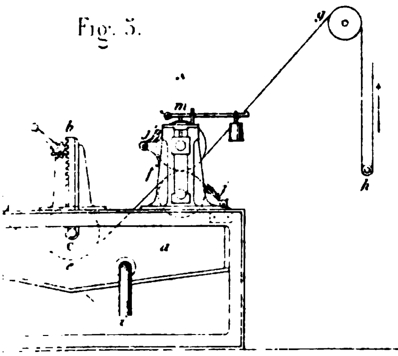
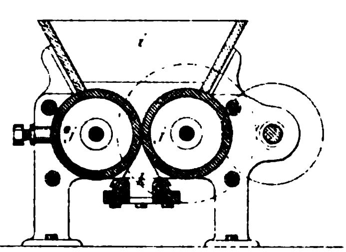


Fig. 1 bis



2 mètres

Éch pour Fig 1 et 2.

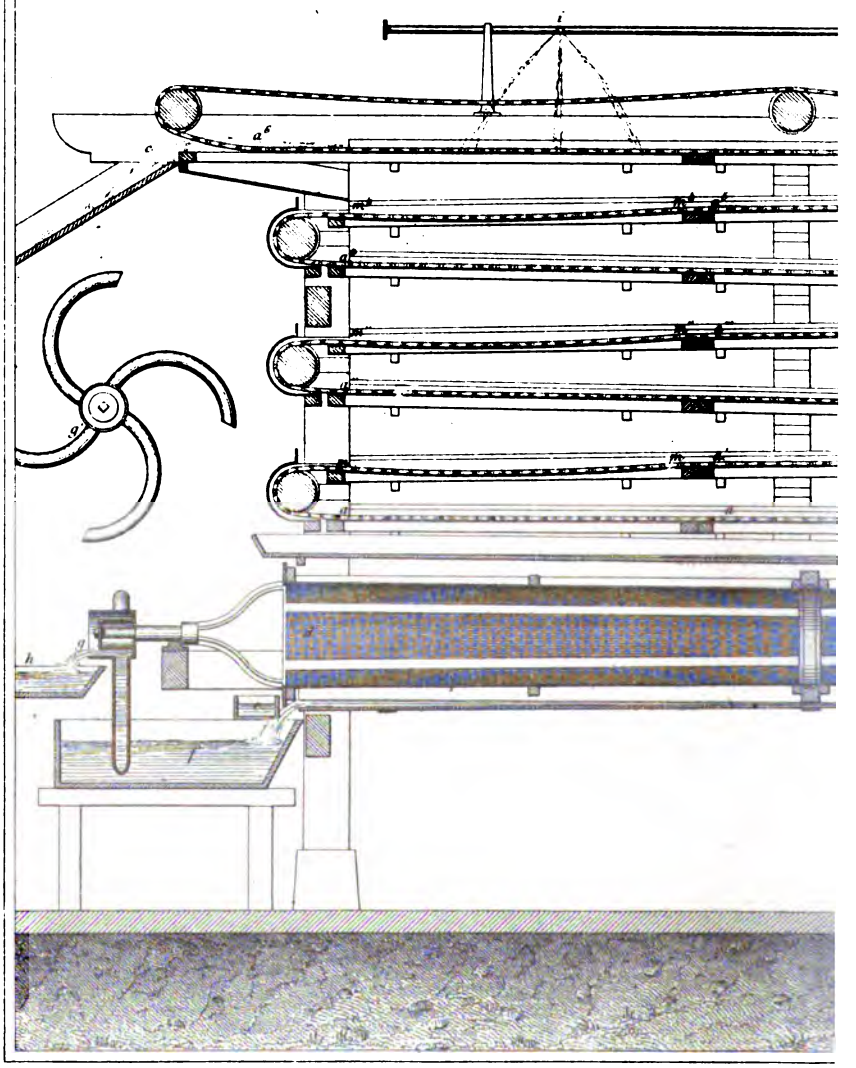
1 2 3 met.

J. Petitcolin L. Chaumont sc

[illegible] et Cie

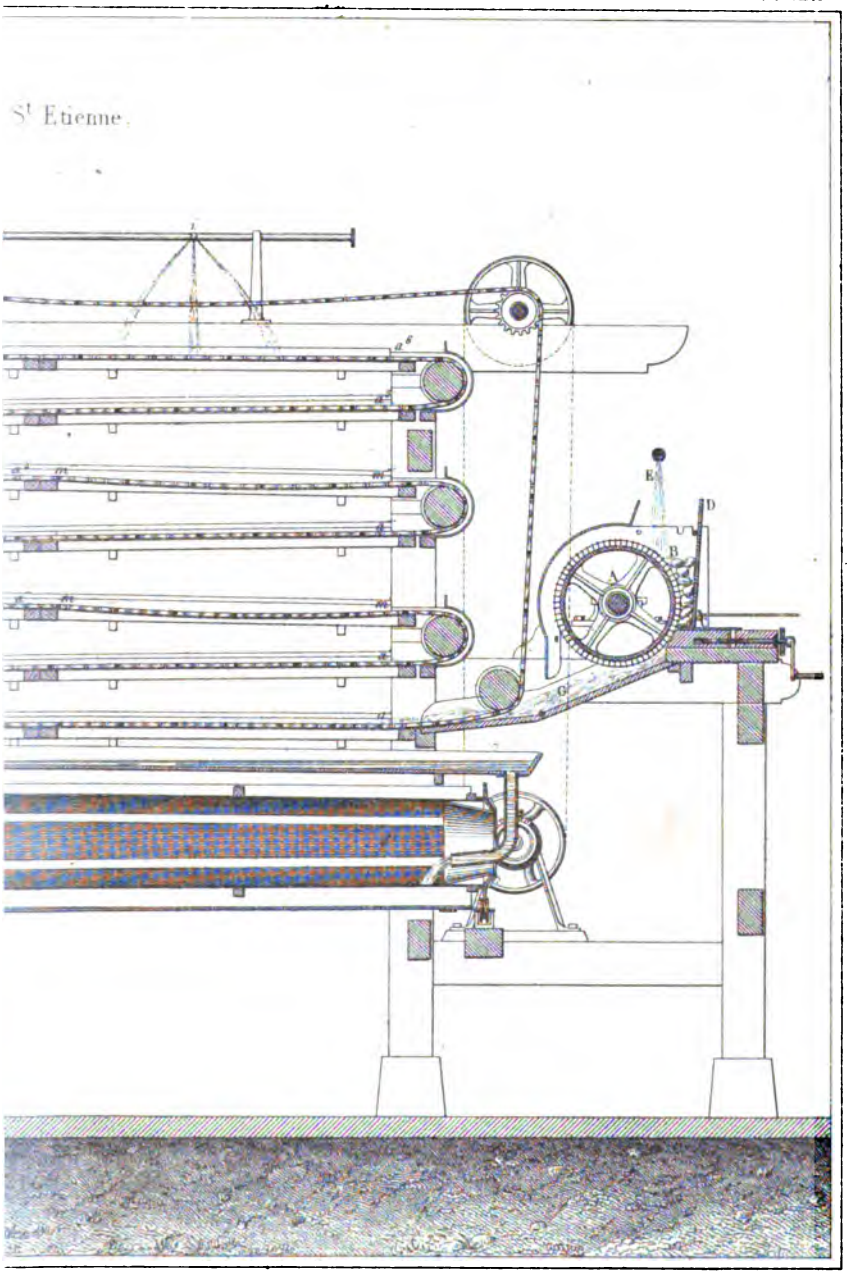
RAPAGE DES POMMES DE TER

Féculerie d



Payen del.

Librairie



ICHETTE et Cie J. Pelletan et L. Chamouin sc.

Fig. 4.

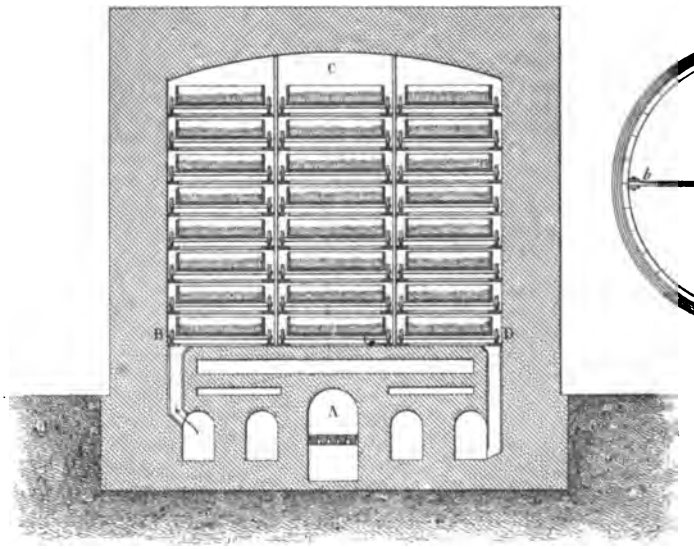


Fig.

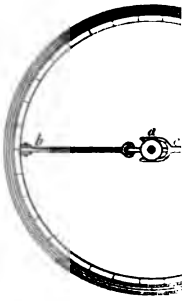


Fig. 6.

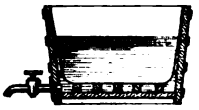
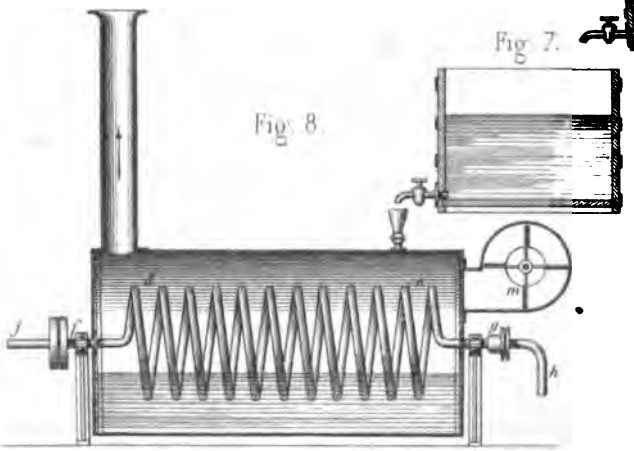


Fig. 7.

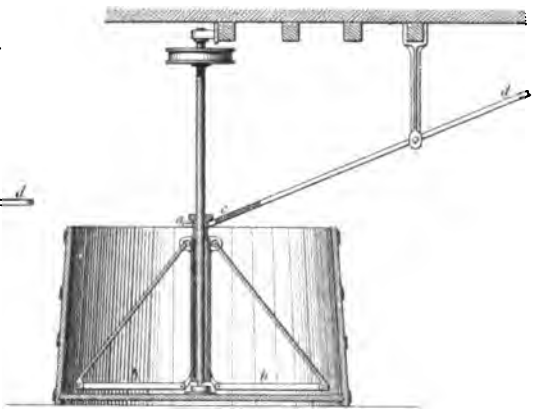
Fig. 8.



Ech

Paquen del.

Fig. 2.



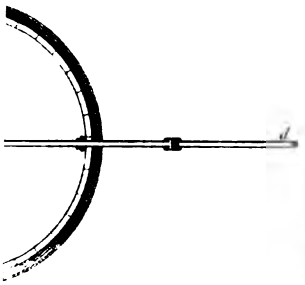


Fig. 5

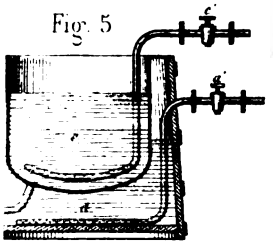
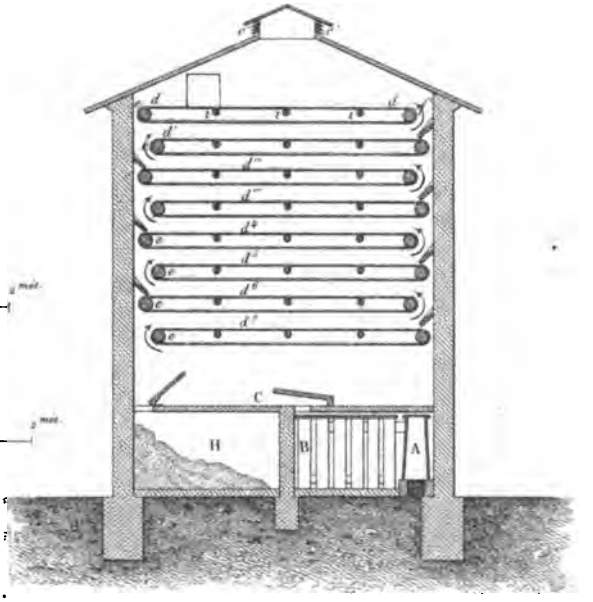
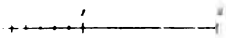


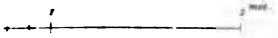
Fig. 3.



Échelle de la Fig. 3

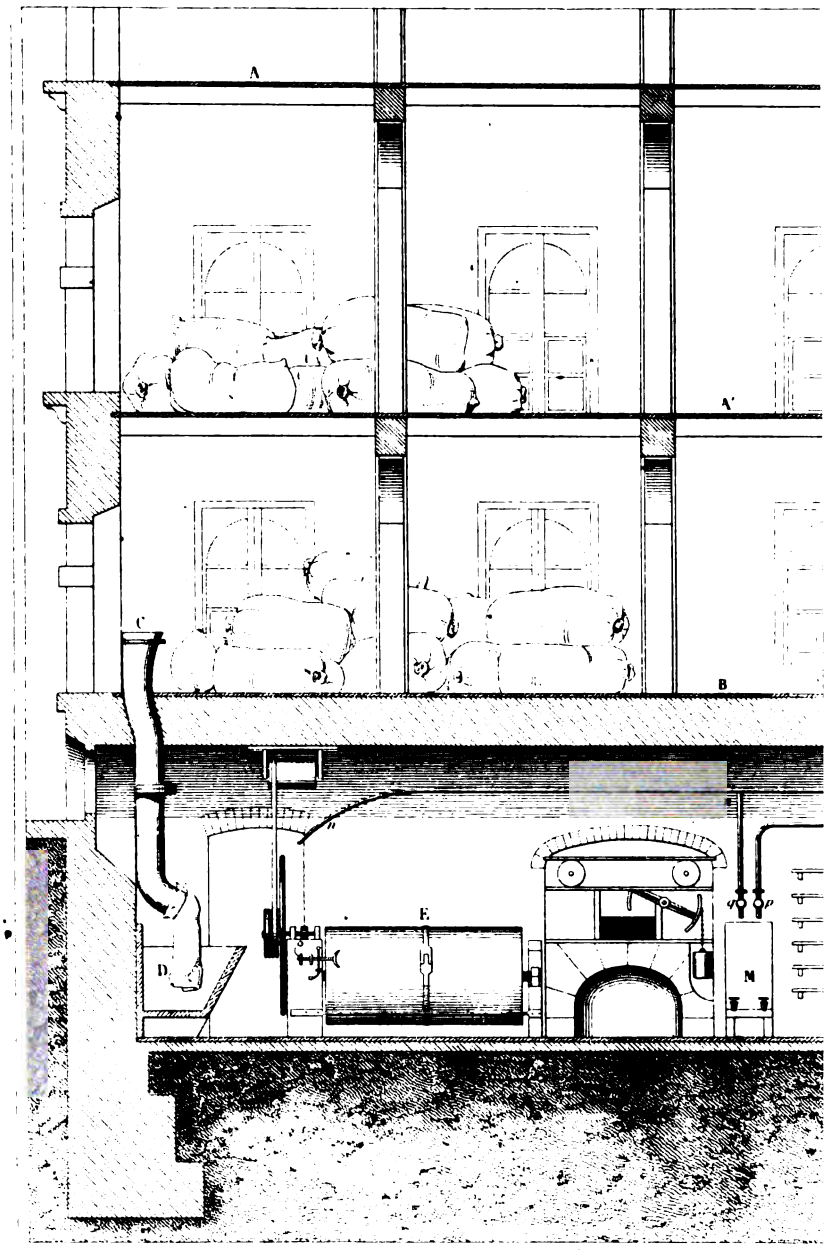


Échelle des Fig. 4 à 8.

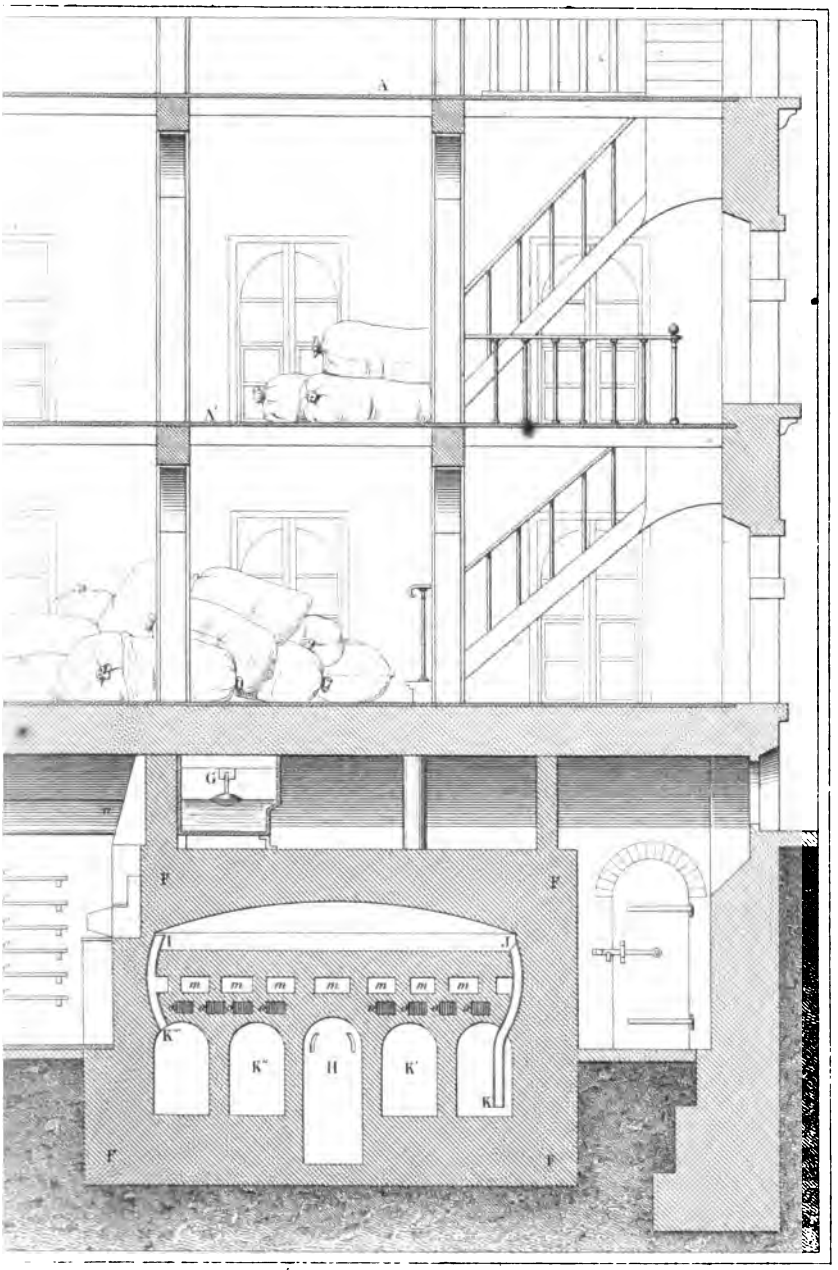


CHIETTE et Cie

J. Prévoteau et L. Chamouin sc.



Cauen del



HETTE et Cie

J. Petitcolas et L. Chaumont sc

Fig. 1.

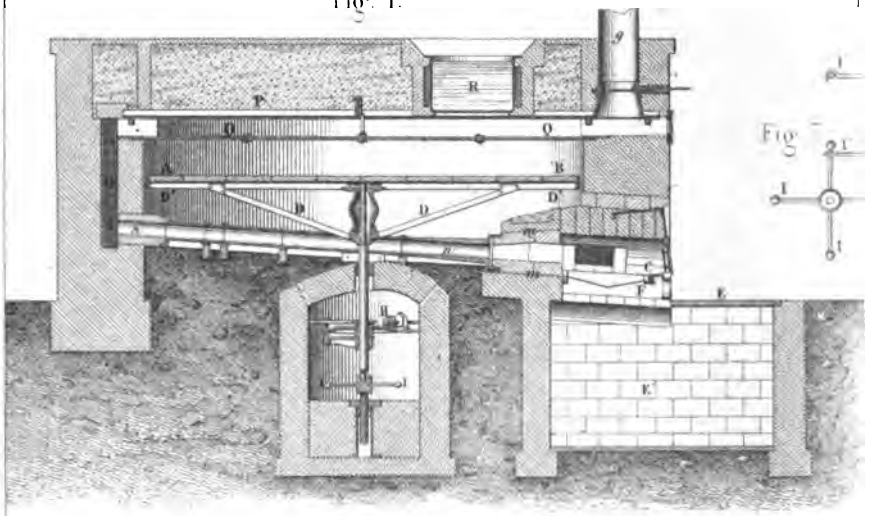


Fig. 2

Fig. 3

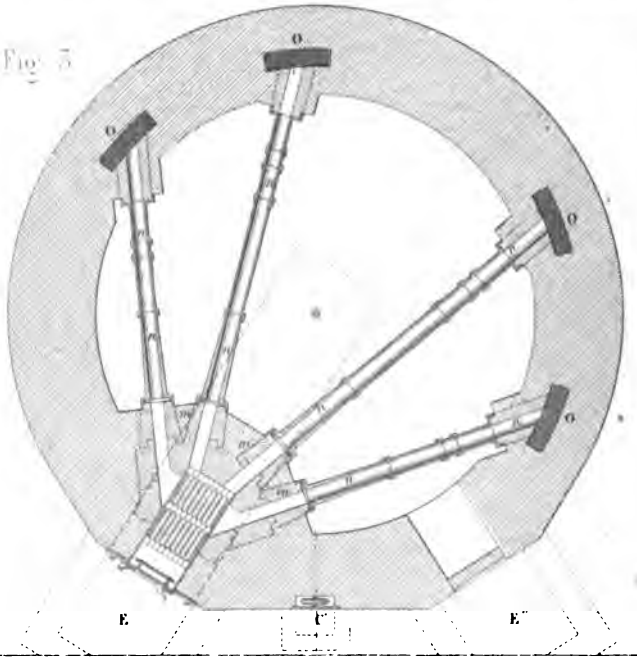
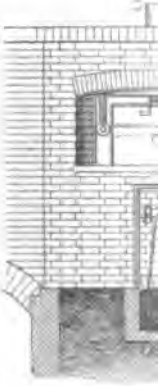


Fig.



Figuier del. Librairie

Fig. 6.

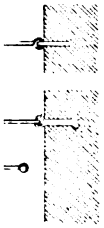
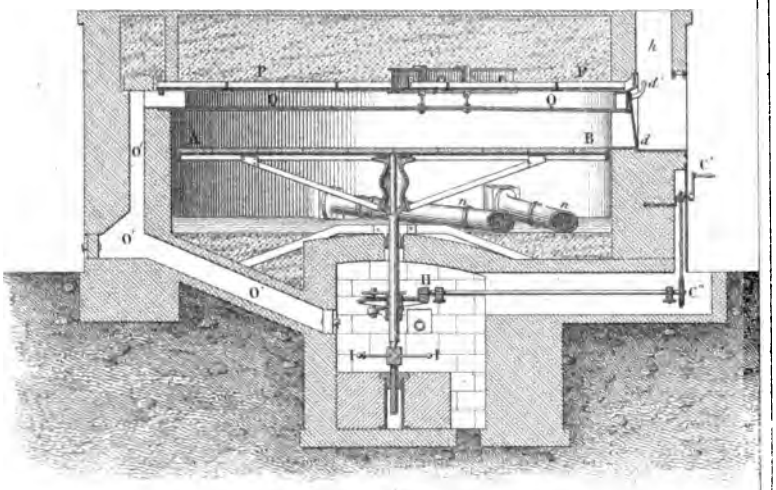


Fig. 2



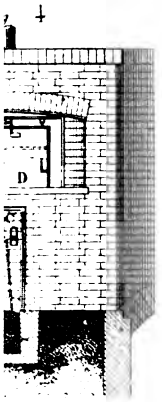
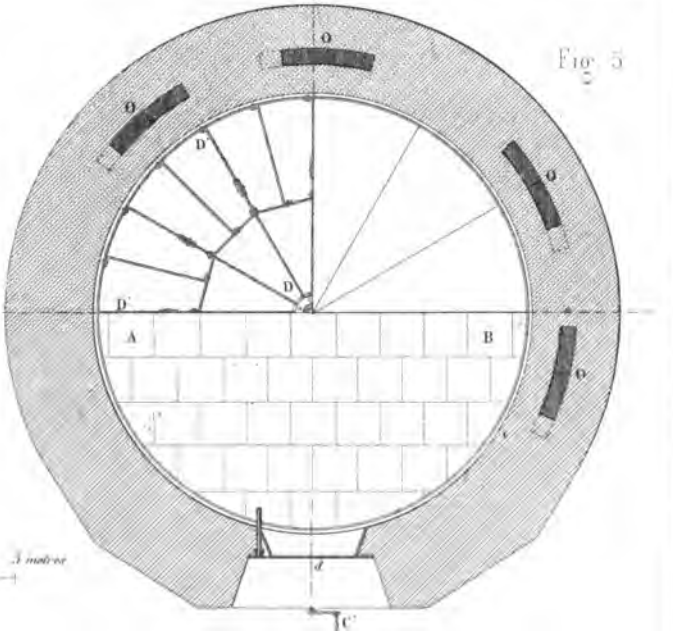


Fig. 3



2 3 mètres

Fig. 3

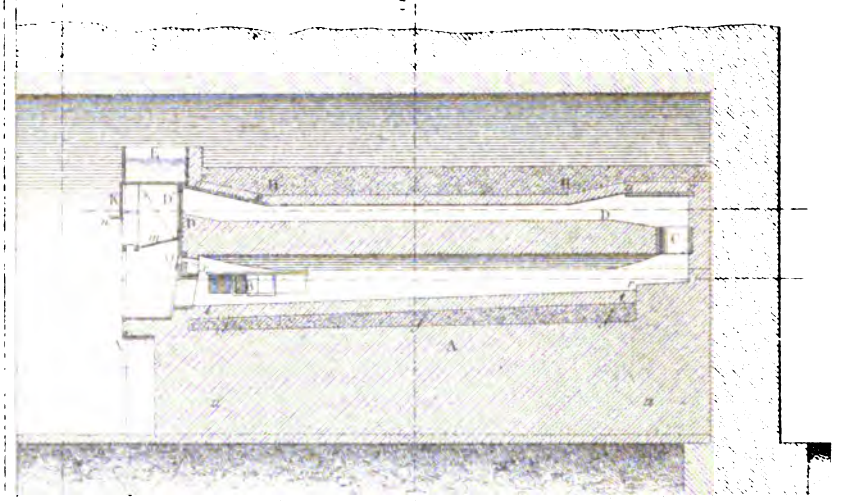


Fig. 4

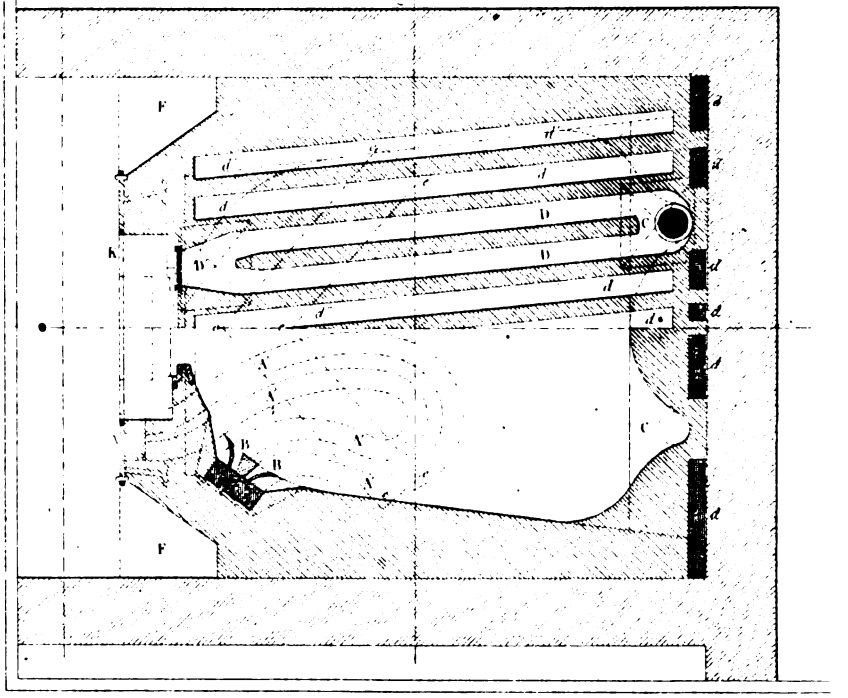


Fig. 2

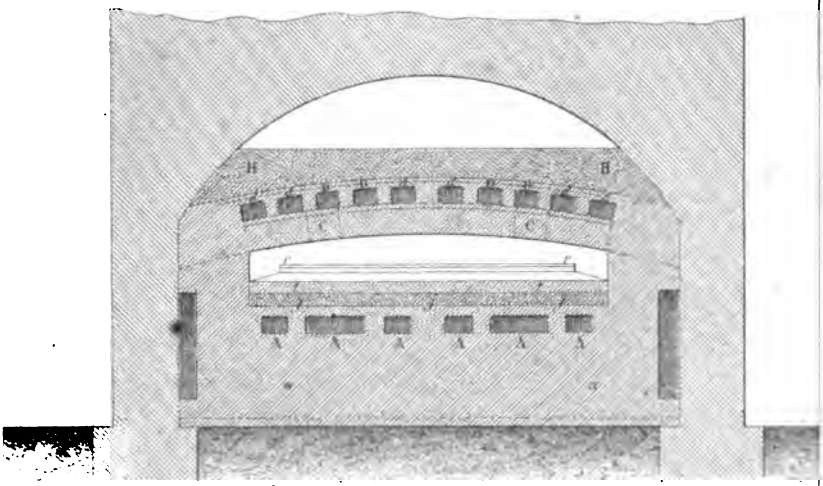
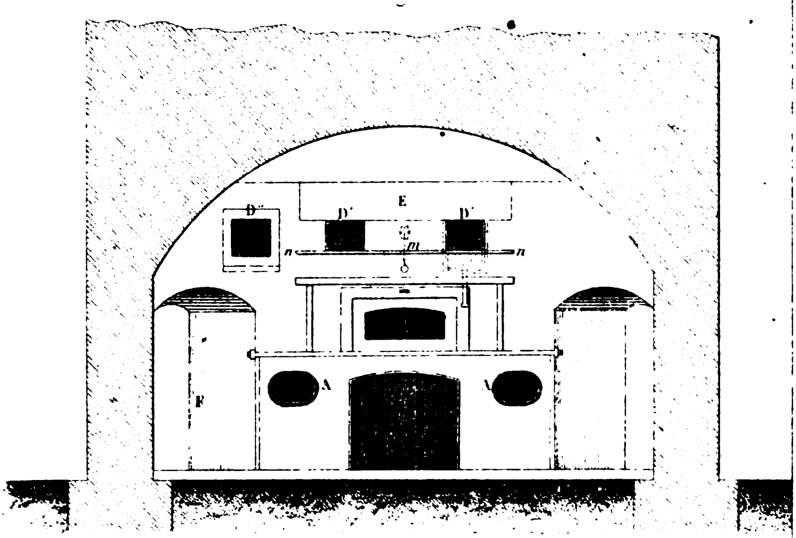
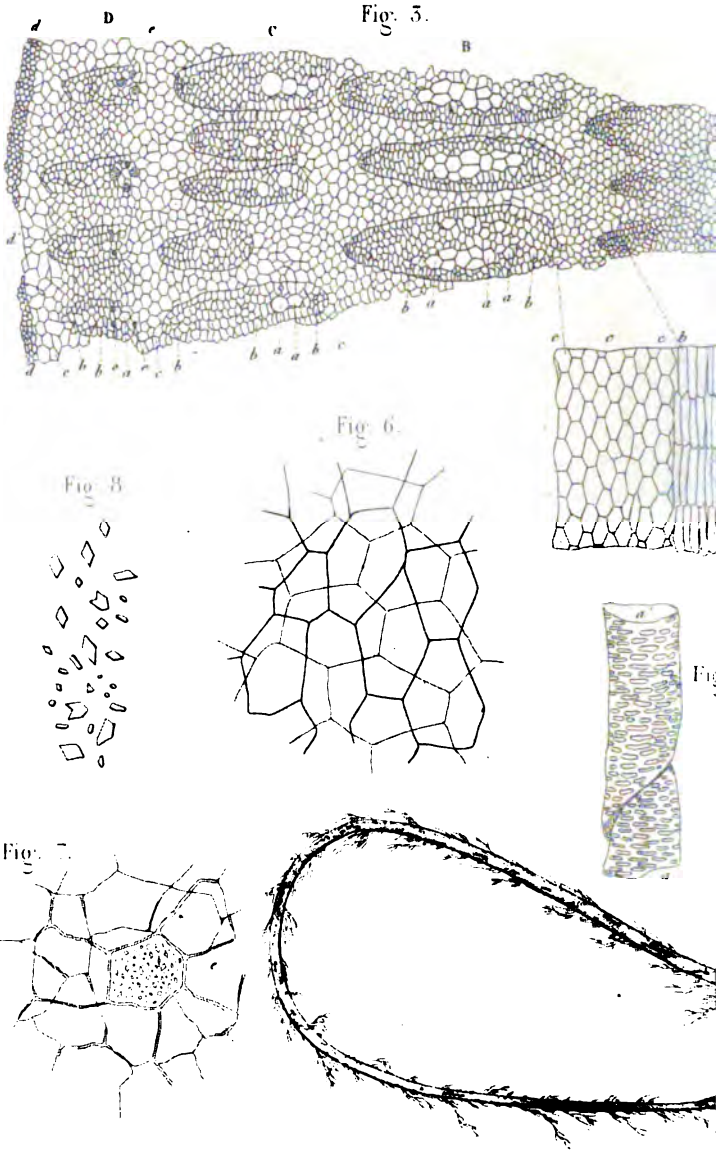


Fig. 1



G. HETTE et Cie

J. Petitcolin et L. Chaumont sc.



Paum del

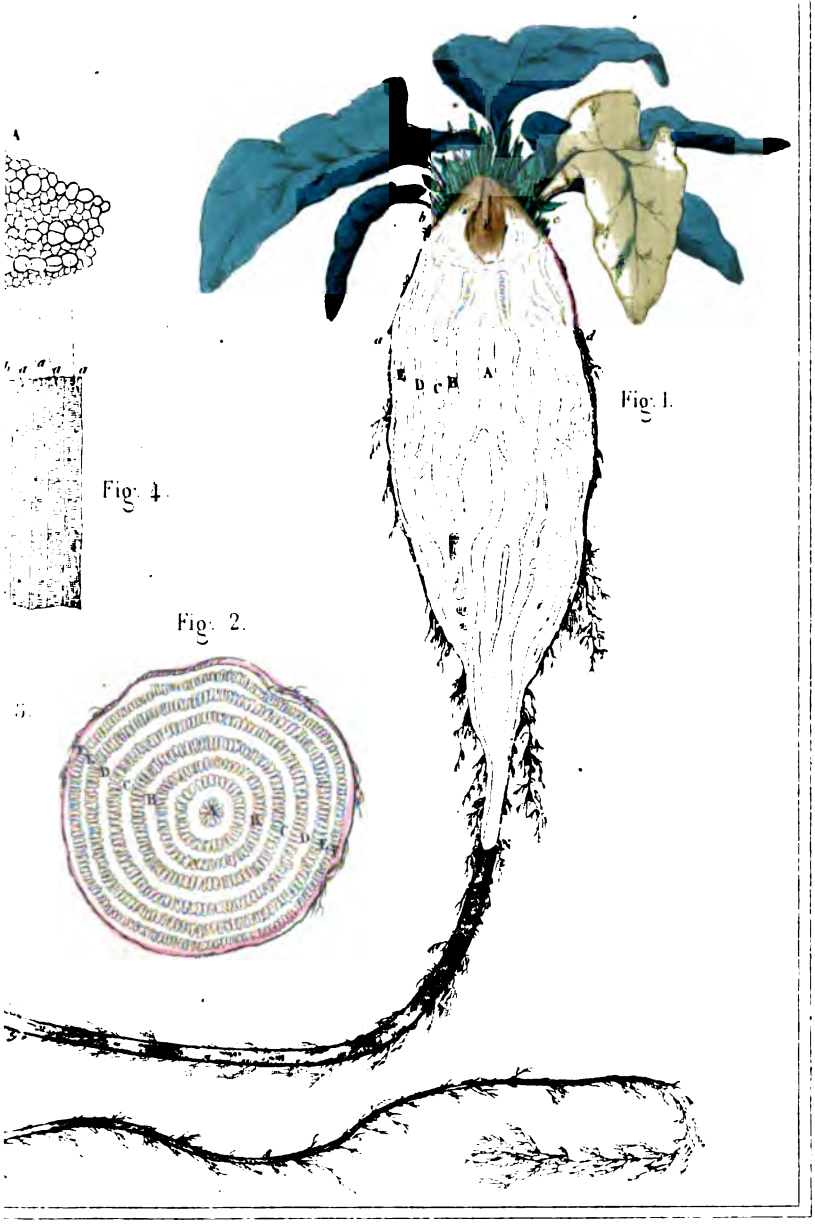
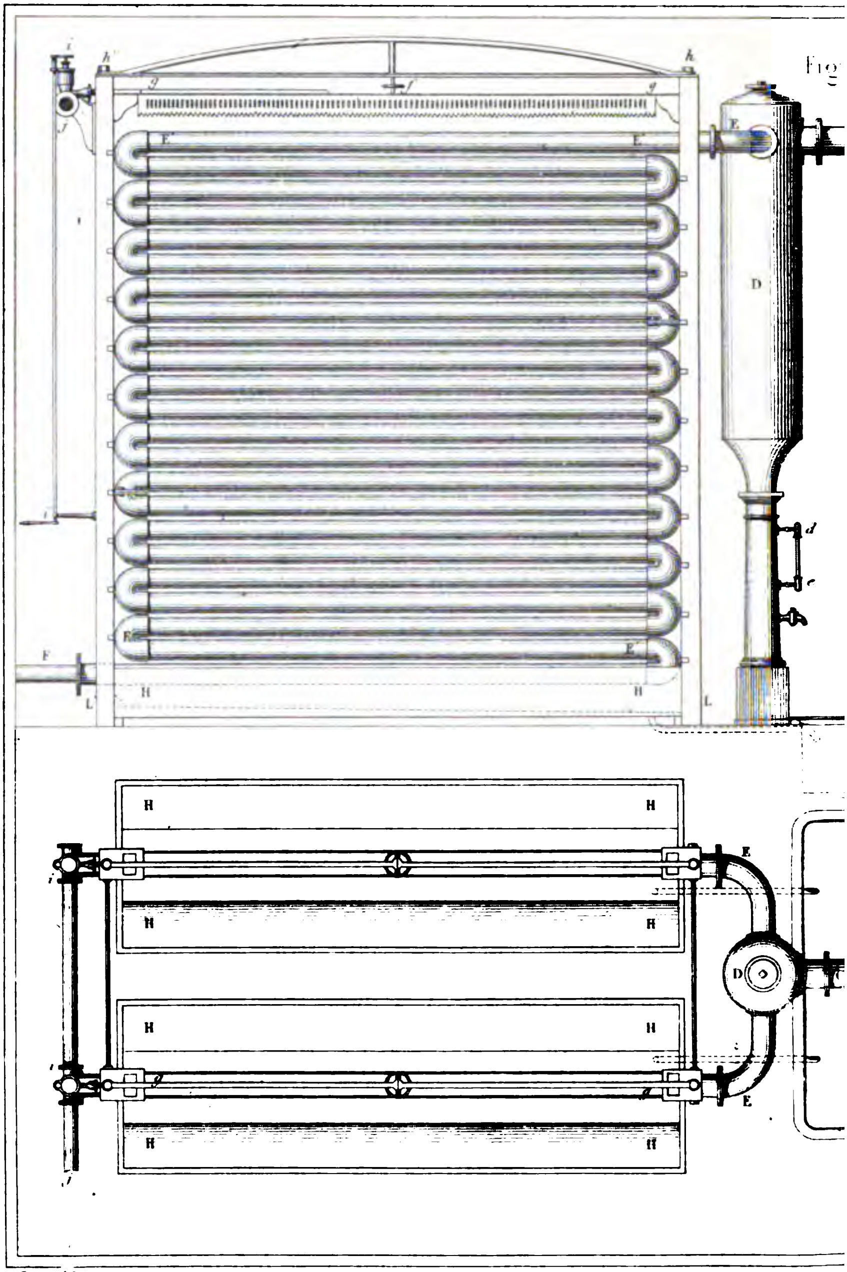


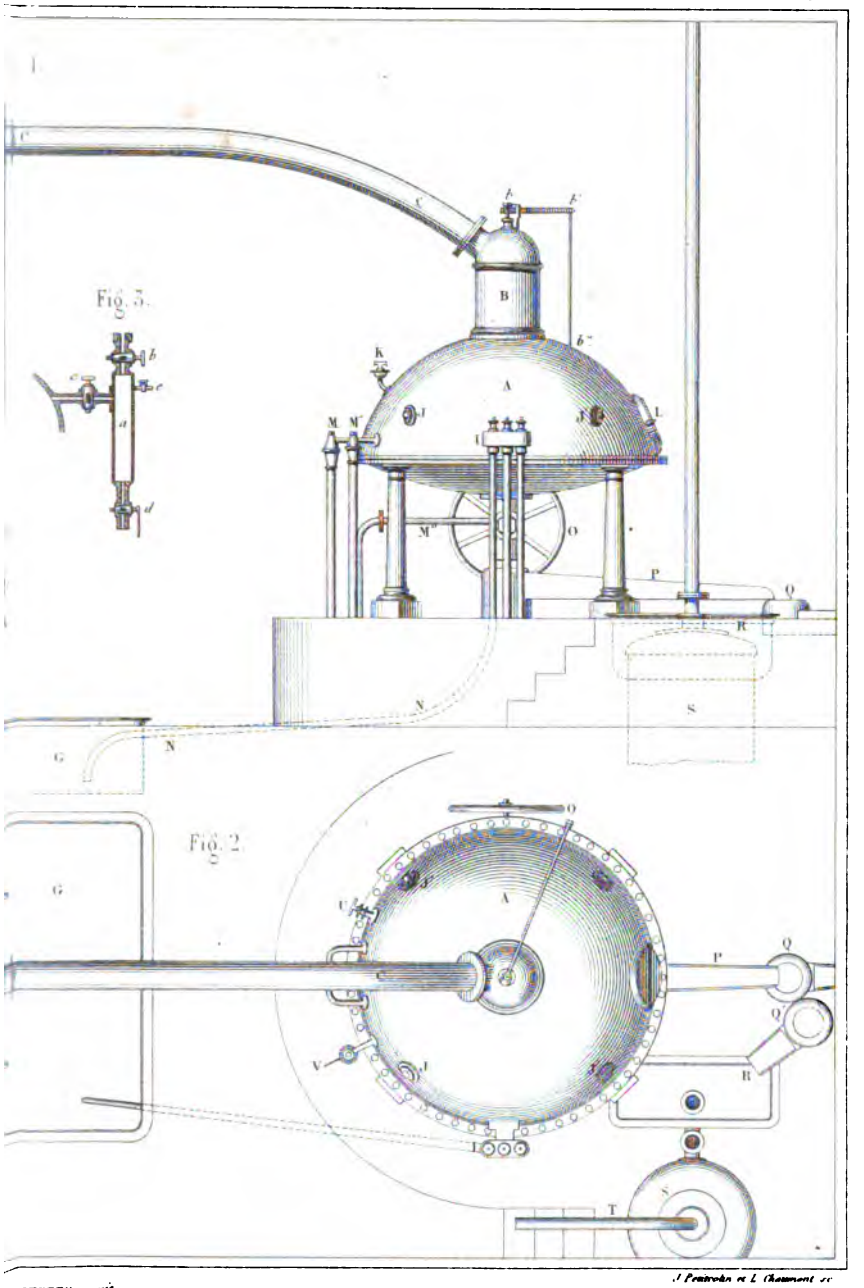
Fig. 1.
Fig. 4.
Fig. 2.

CONCENTRATION DES JUS ET SIROPS



Payen del.

Librairie … H…



CHETTE et Cie
J. Pennelier et L. Chatenet sc

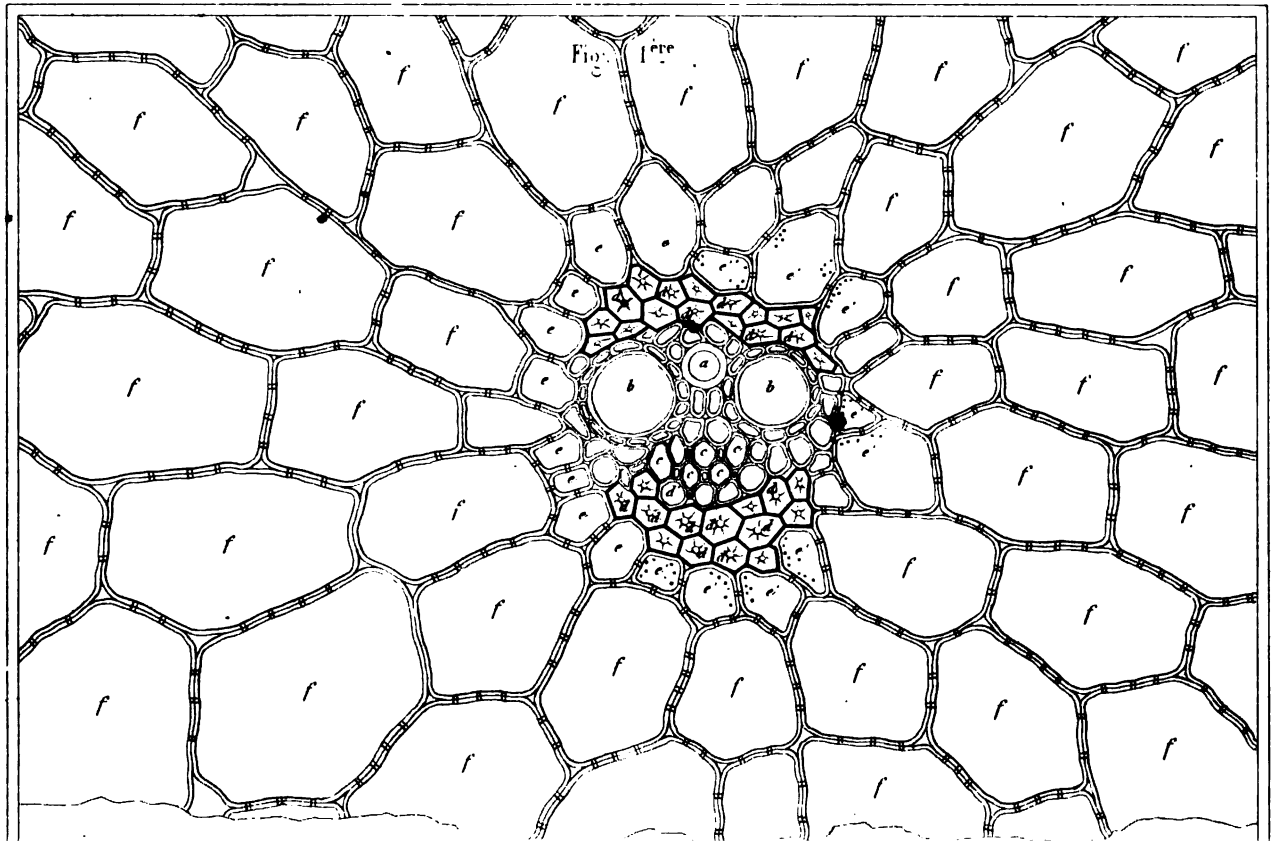


Fig. 1ère
f
e
b
a

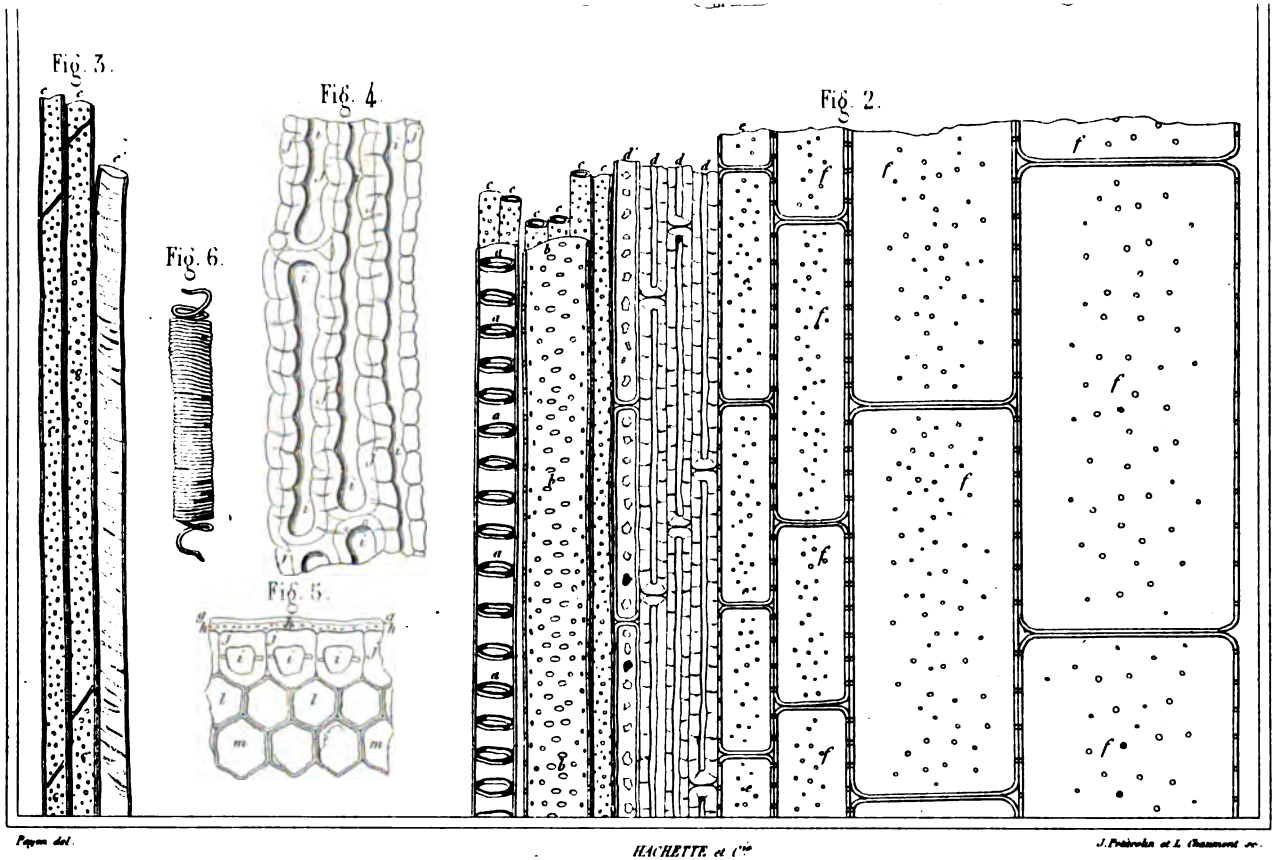
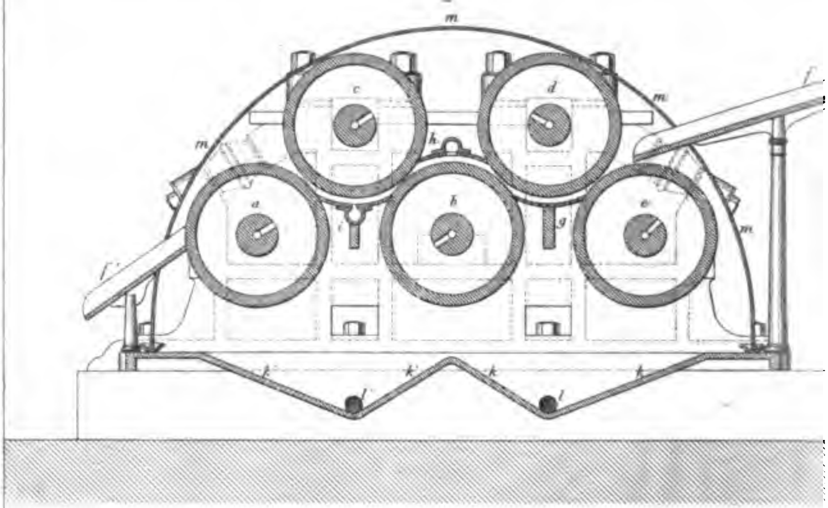
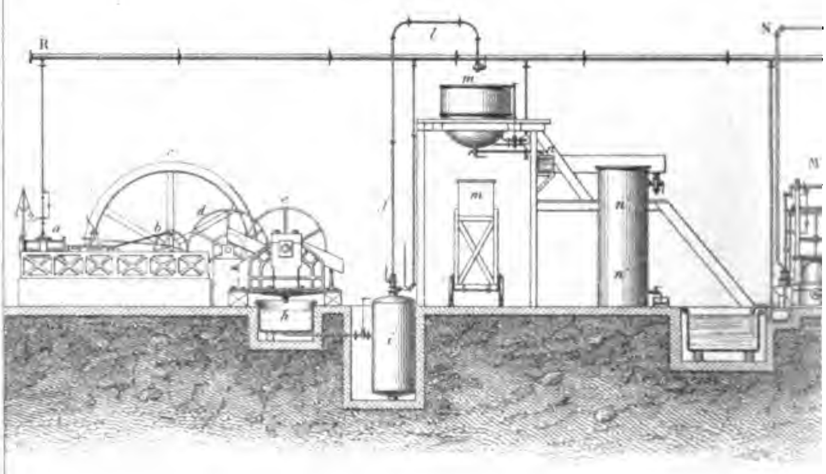


Fig. 3.
Fig. 4.
Fig. 2.
Fig. 6.
Fig. 5.
Payen del.
HACHETTE et Cie
J. Pelouze et L. Chaumont sc.

Fig. 1

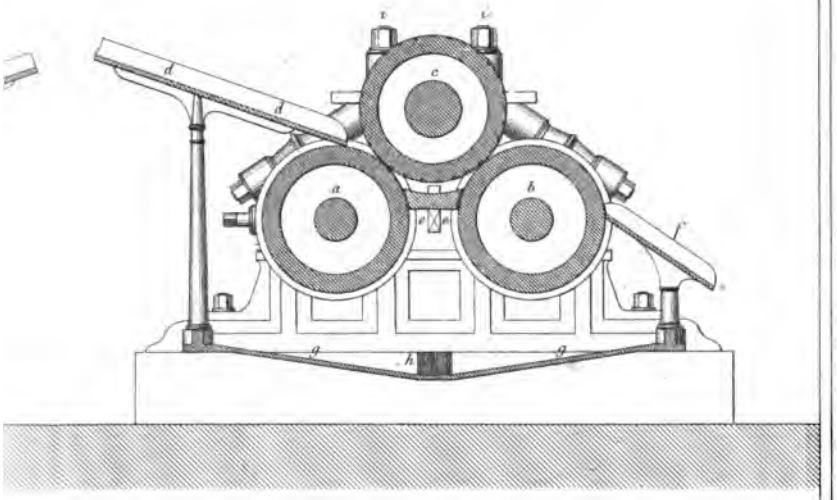


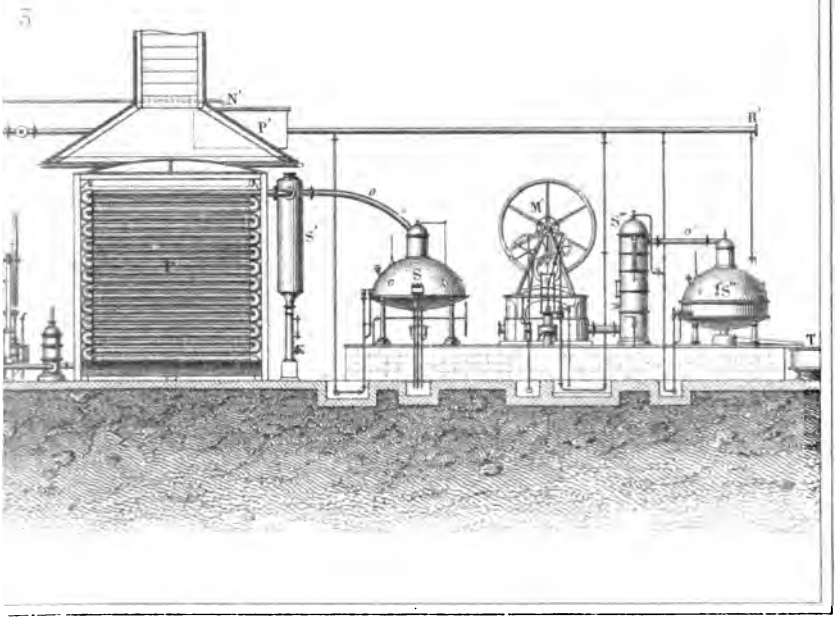
Fig



l'uyen del.

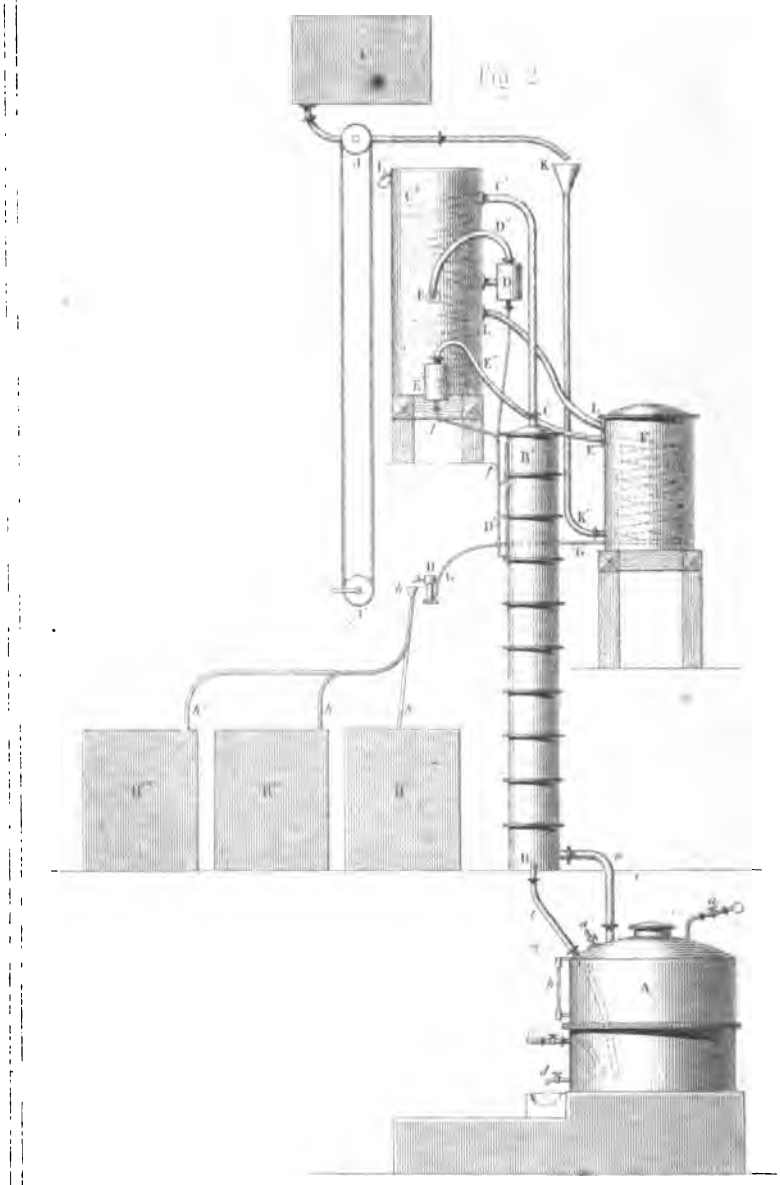
Fig. 2.

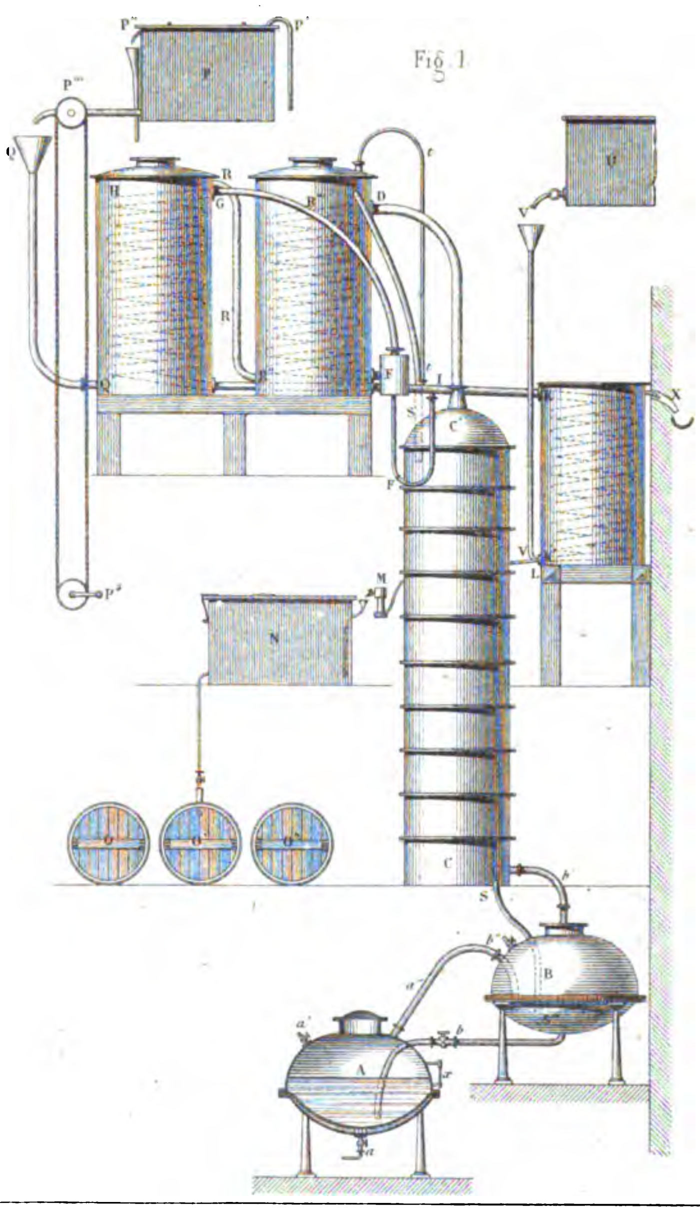




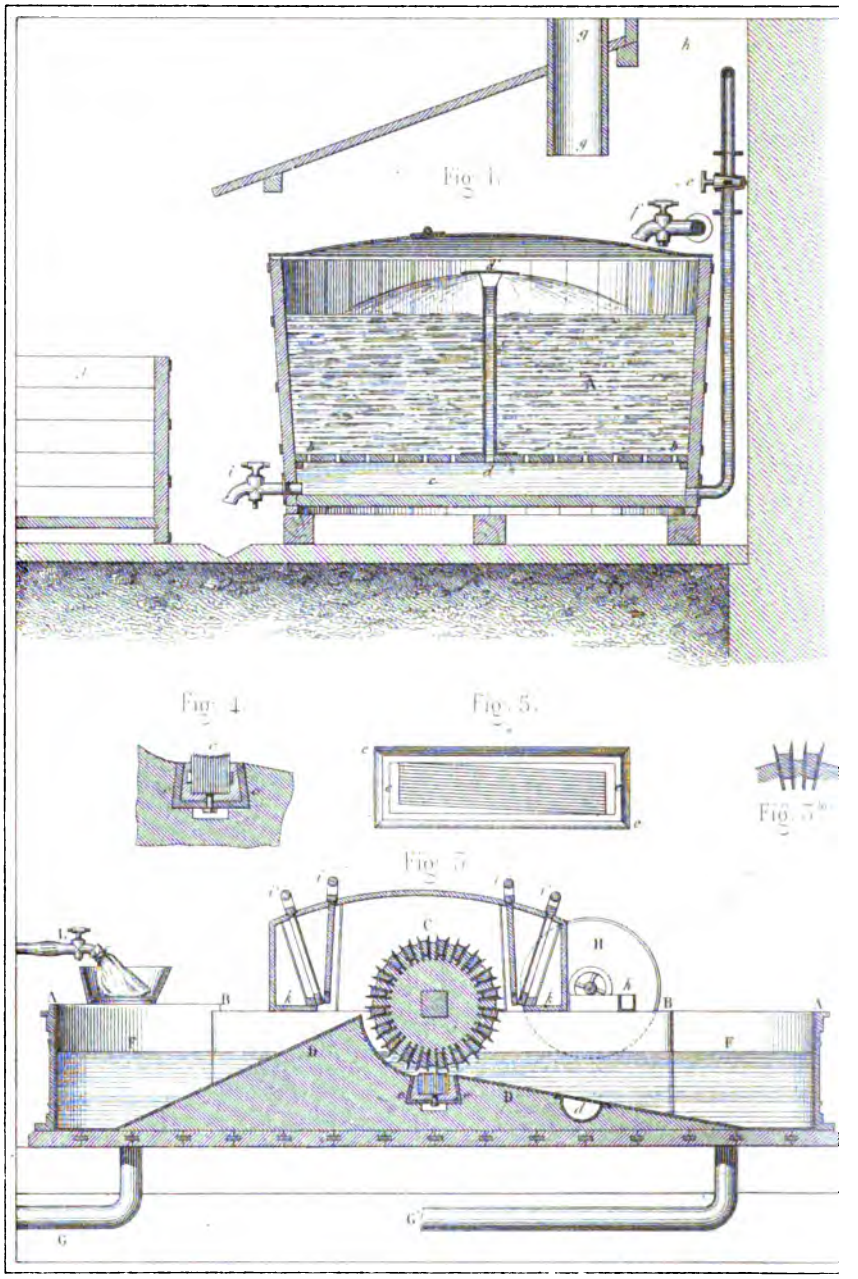
J. Petitcolas et J. Chaumont sc.

MILLETTE et Cie





...HATTE et Cie
J. Petitcolin et L. Chaumont sc.



Payen del

Fig. 2.

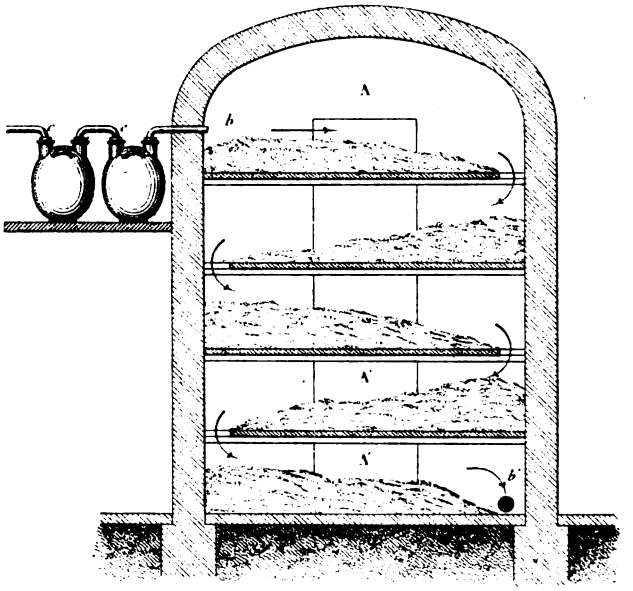


Fig. 6.

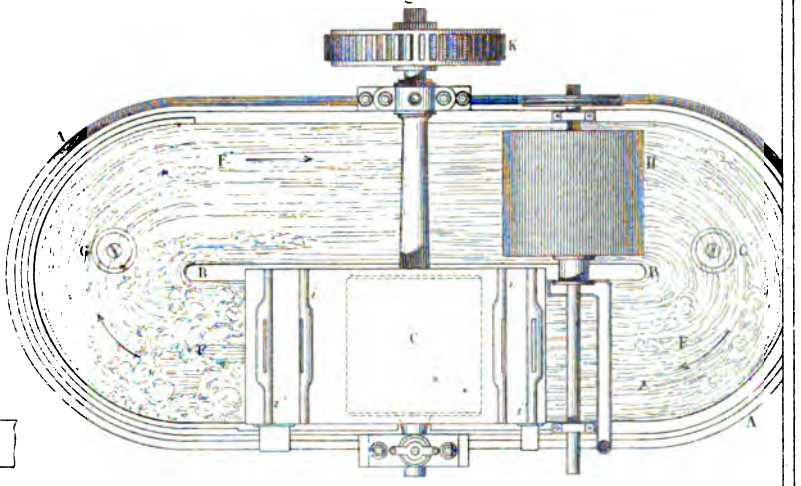


Fig. 1.

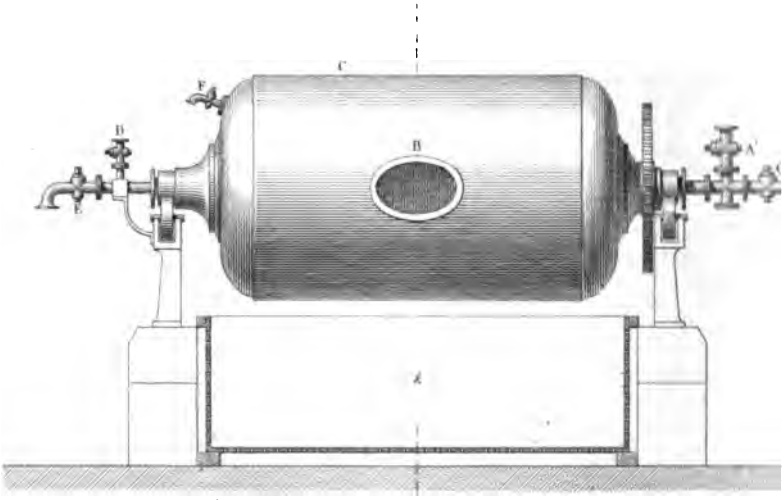
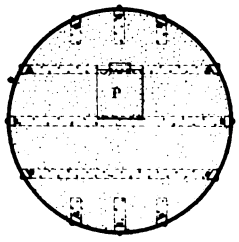


Fig. 4.



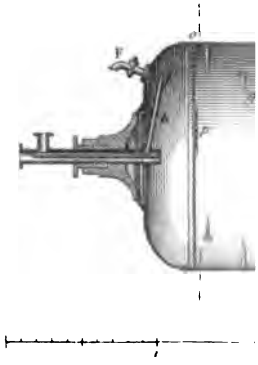


Fig. 2.

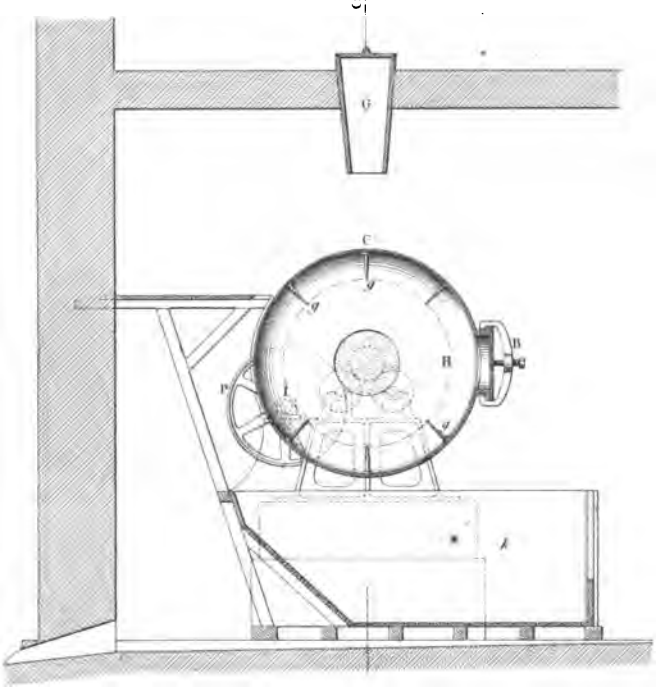


Fig. 3.

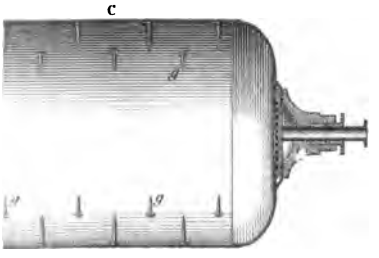
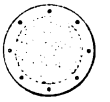


Fig. 5.



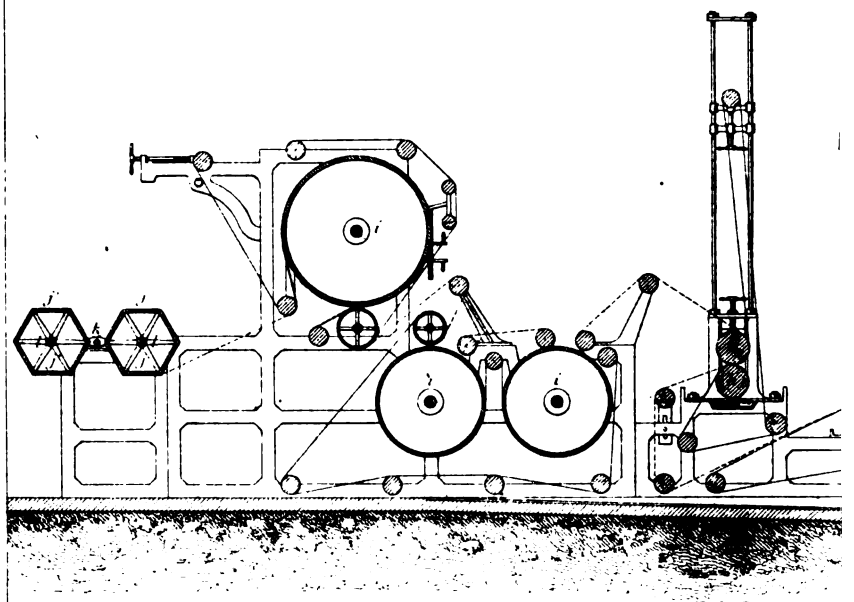
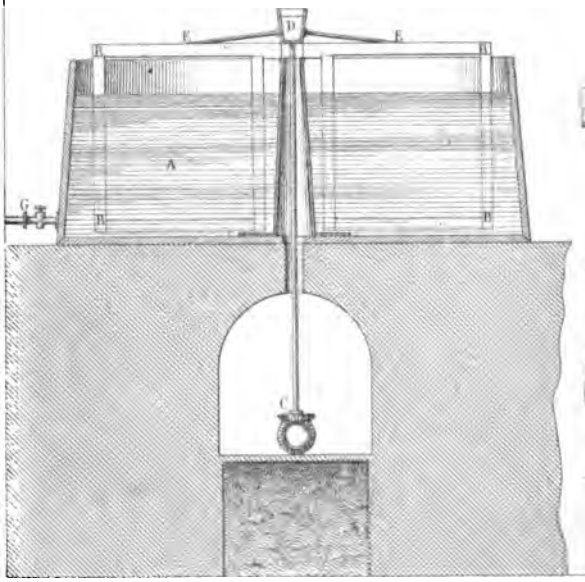


Fig. 3

Fig. 1



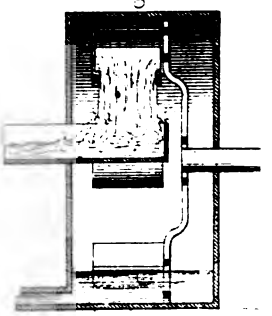
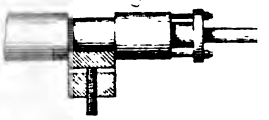


Fig. 7.



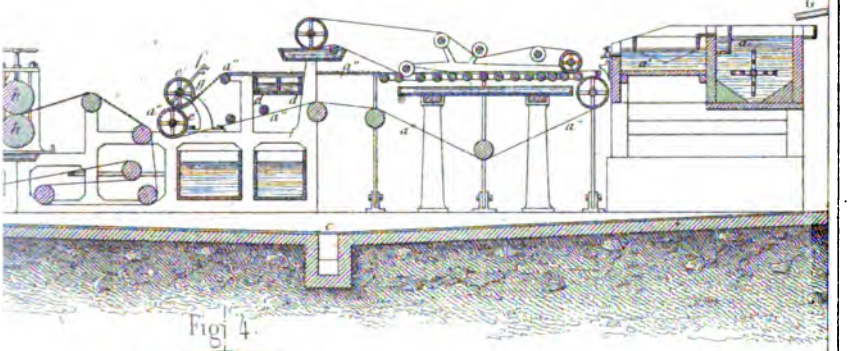


Fig. 4.

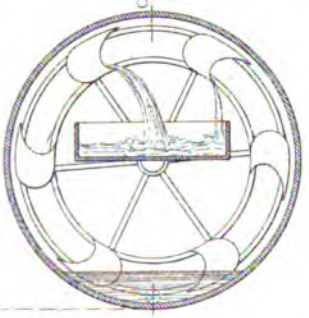


Fig. 8.

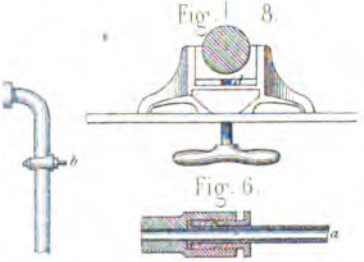
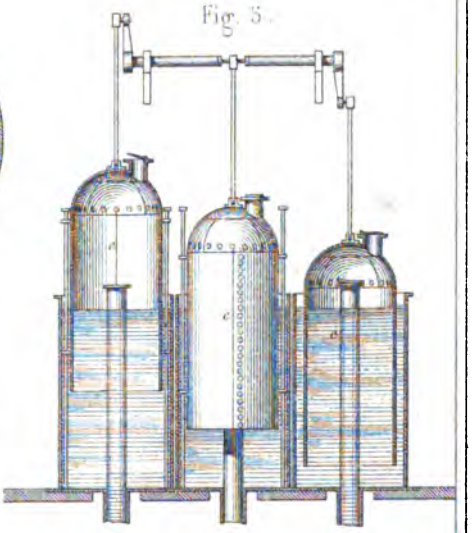


Fig. 6.

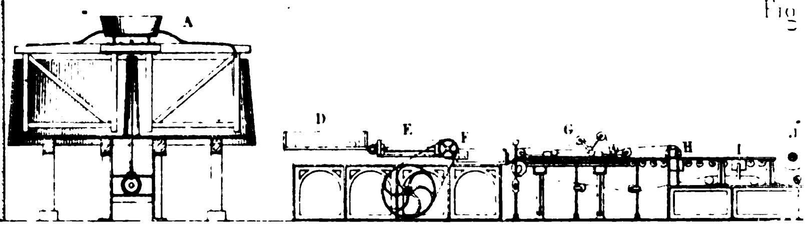
Fig. 5.



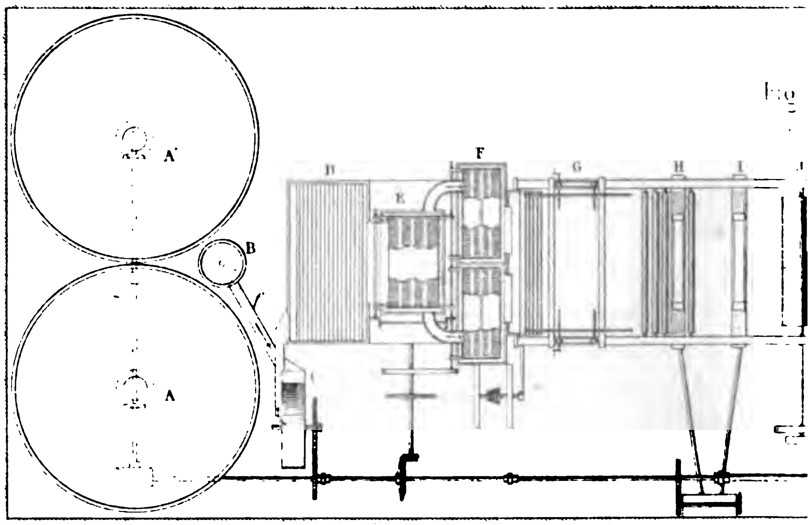
HAITE et Cie

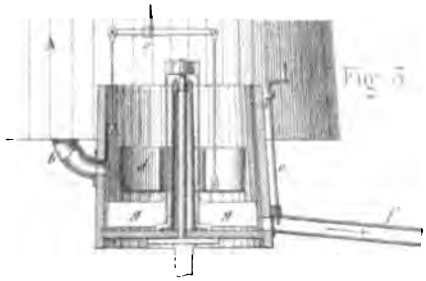
J Pranville et L Chamouin &c

Fig

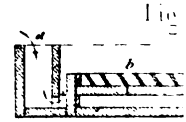


Fig





Fig

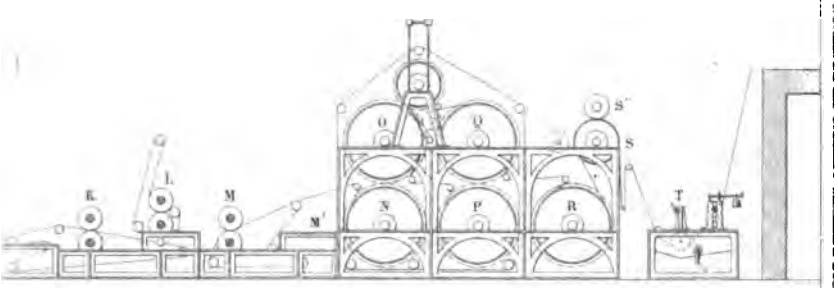


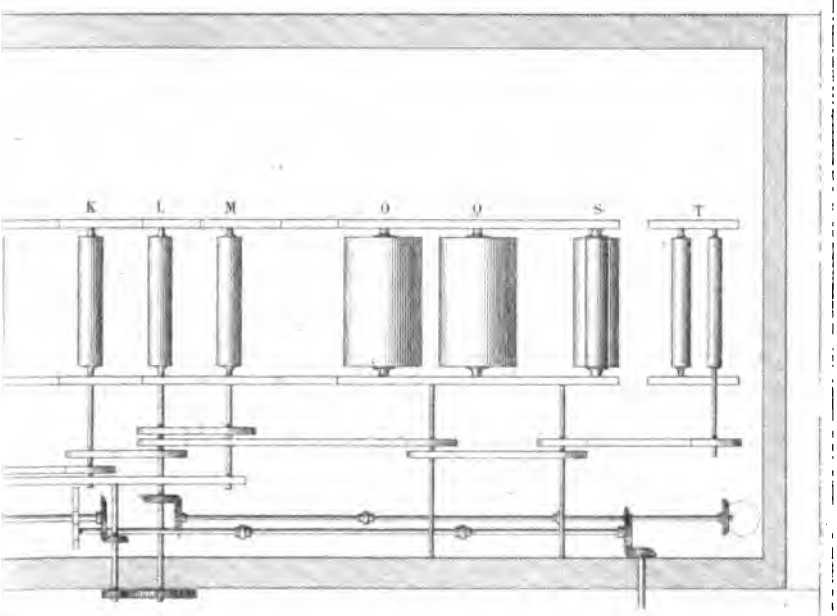
Ech. pou

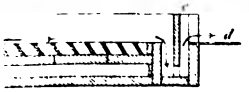
1 2

Payen del

Librairie – L.







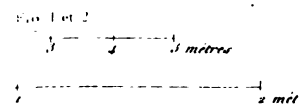
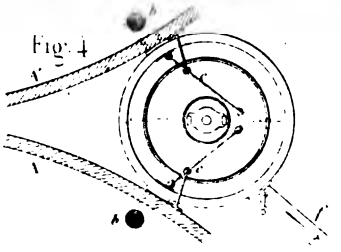


Fig. 4



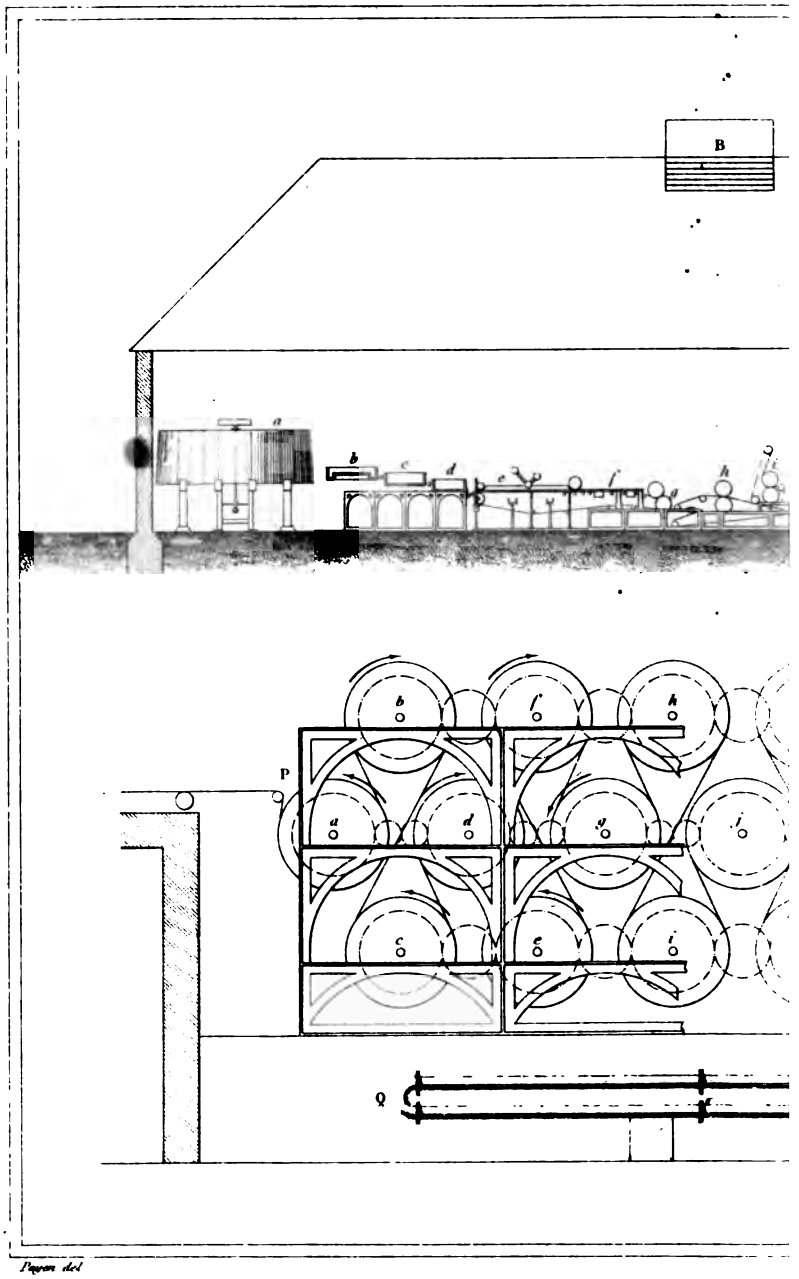
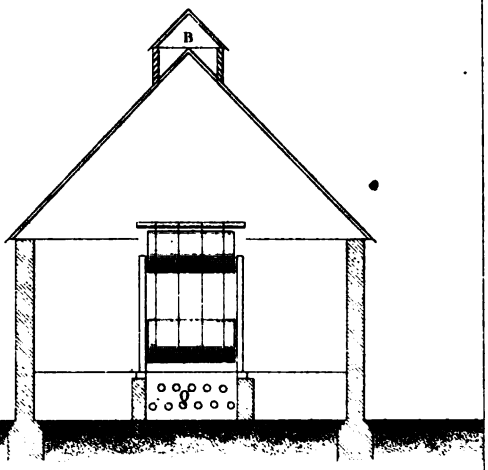

B
P
Q

Fig. 2.



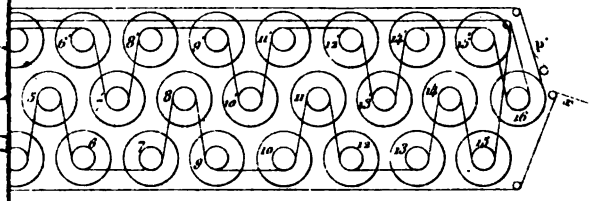


Fig. 6.

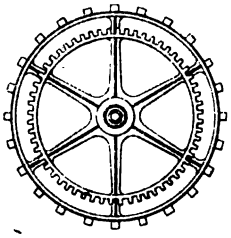
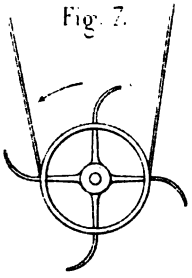


Fig. 7.



J. Pecheux et L. Chaumont

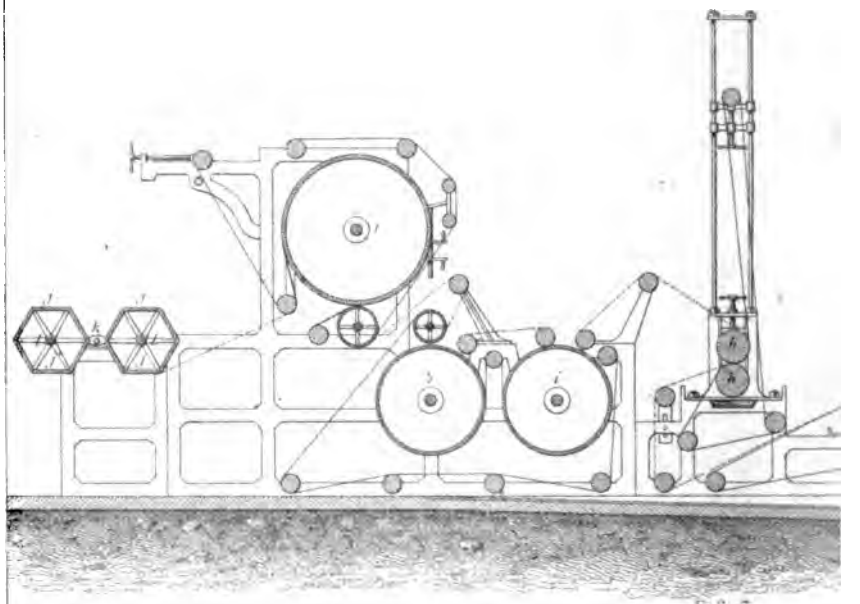


Fig. 1

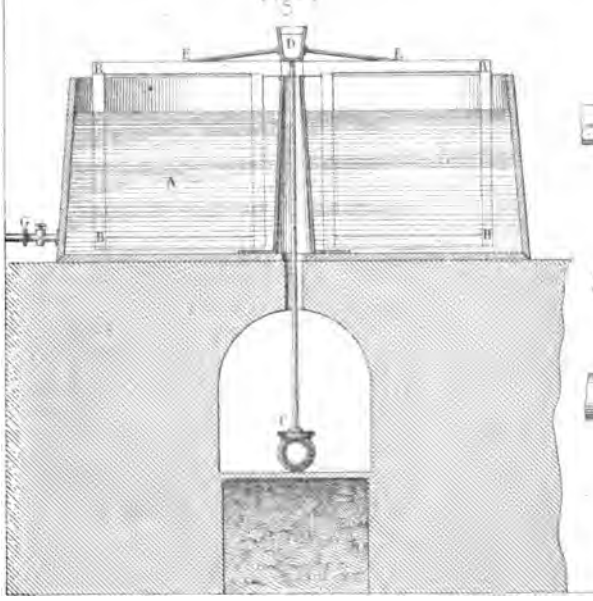


Fig. 3

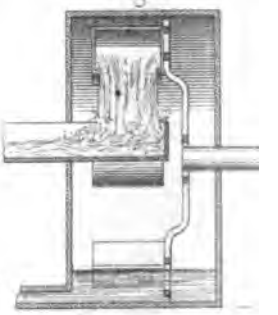


Fig. 7.

Fig. 4.

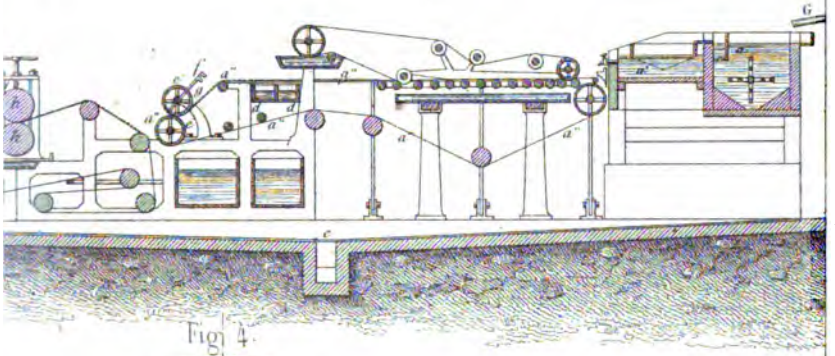
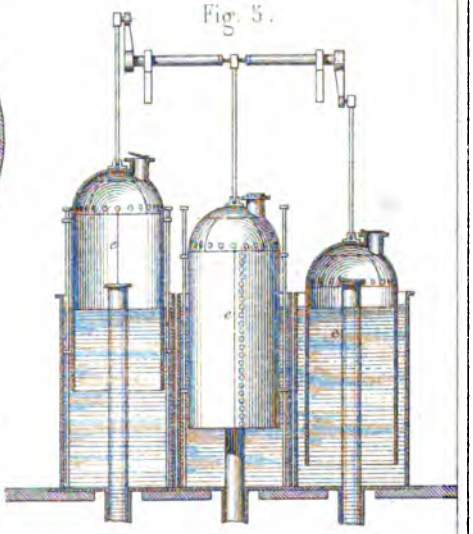


Fig. 5.



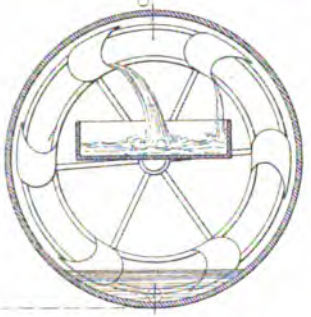
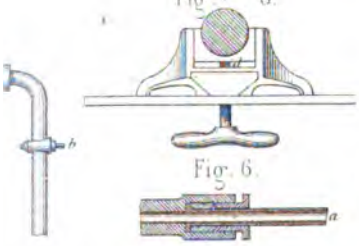


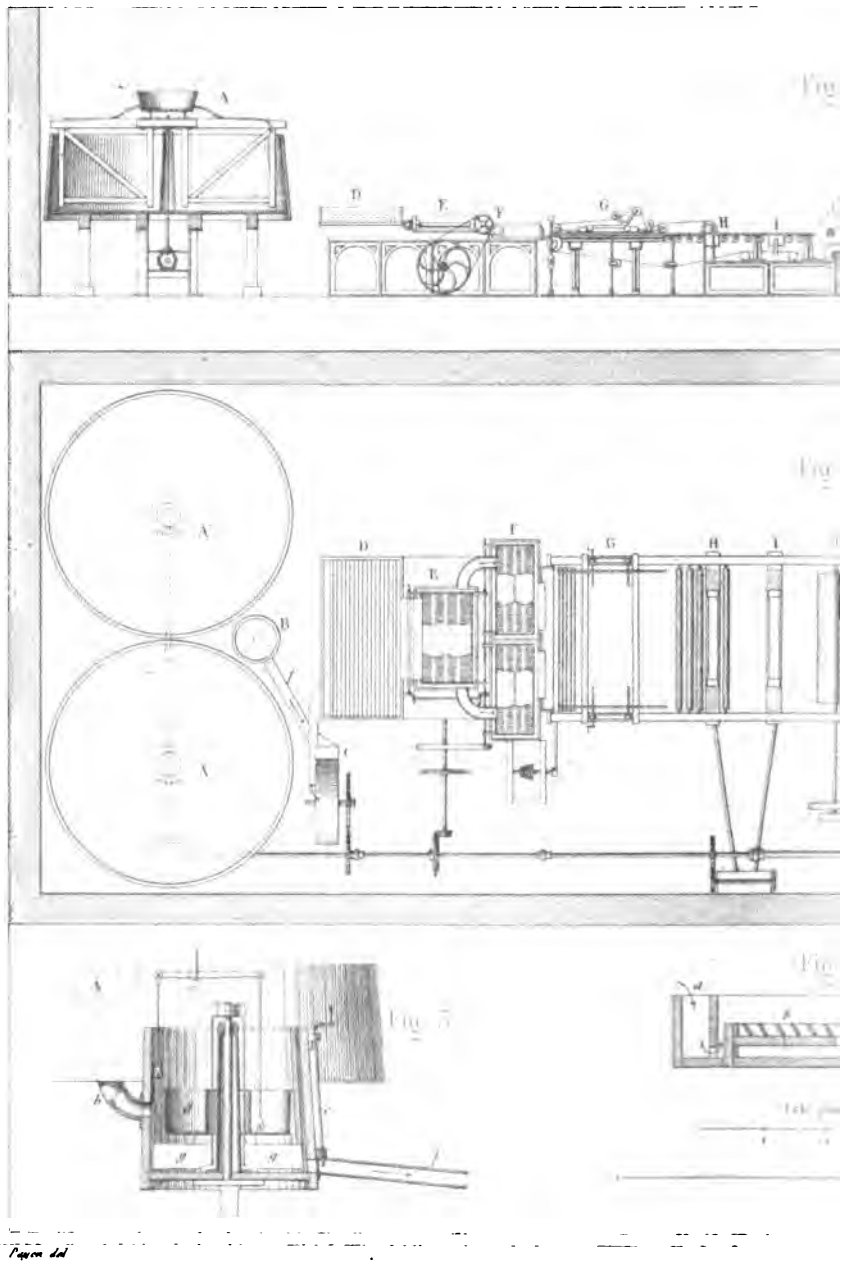
Fig. 6.

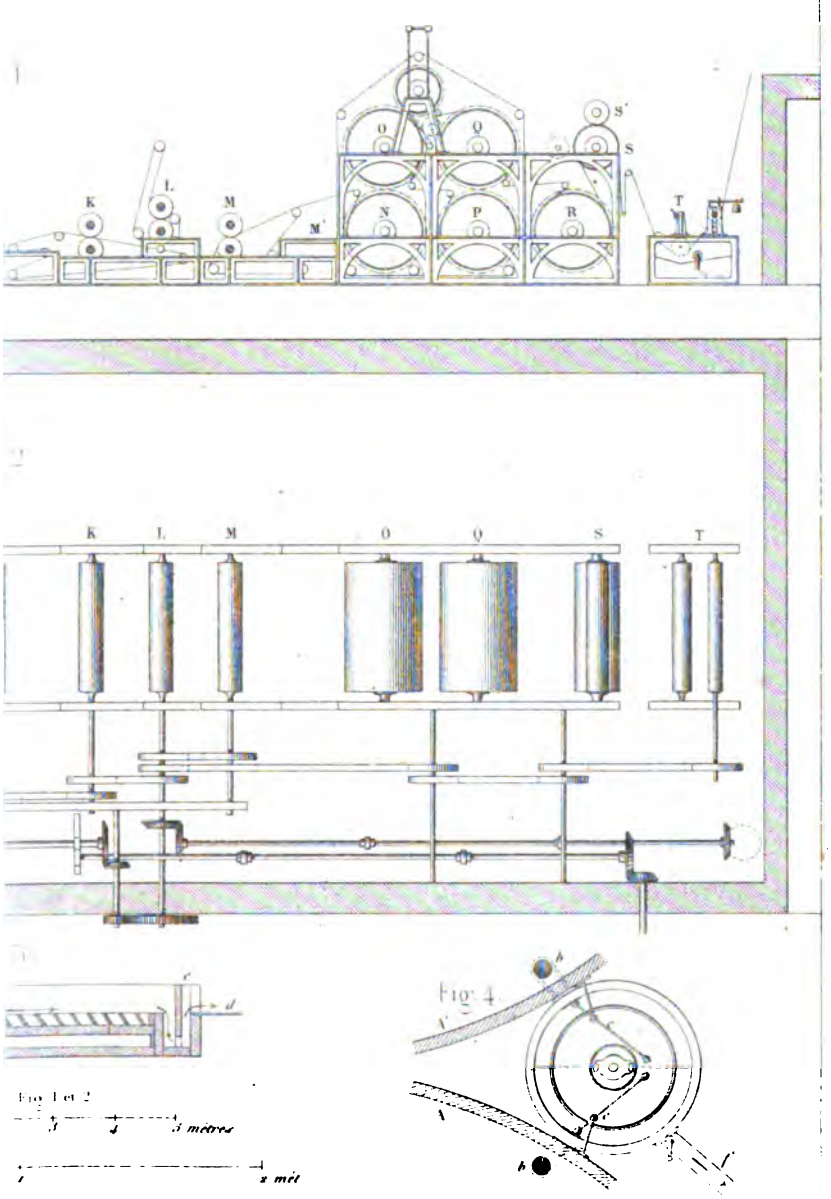


J. Pretsch et L. Chamont &c

HETTE et Cie

GRANDES CUVES, RÉGULATEUR, SABLIER





J. Petit-Jean et L. Chaumont

BATTAIL et Cie

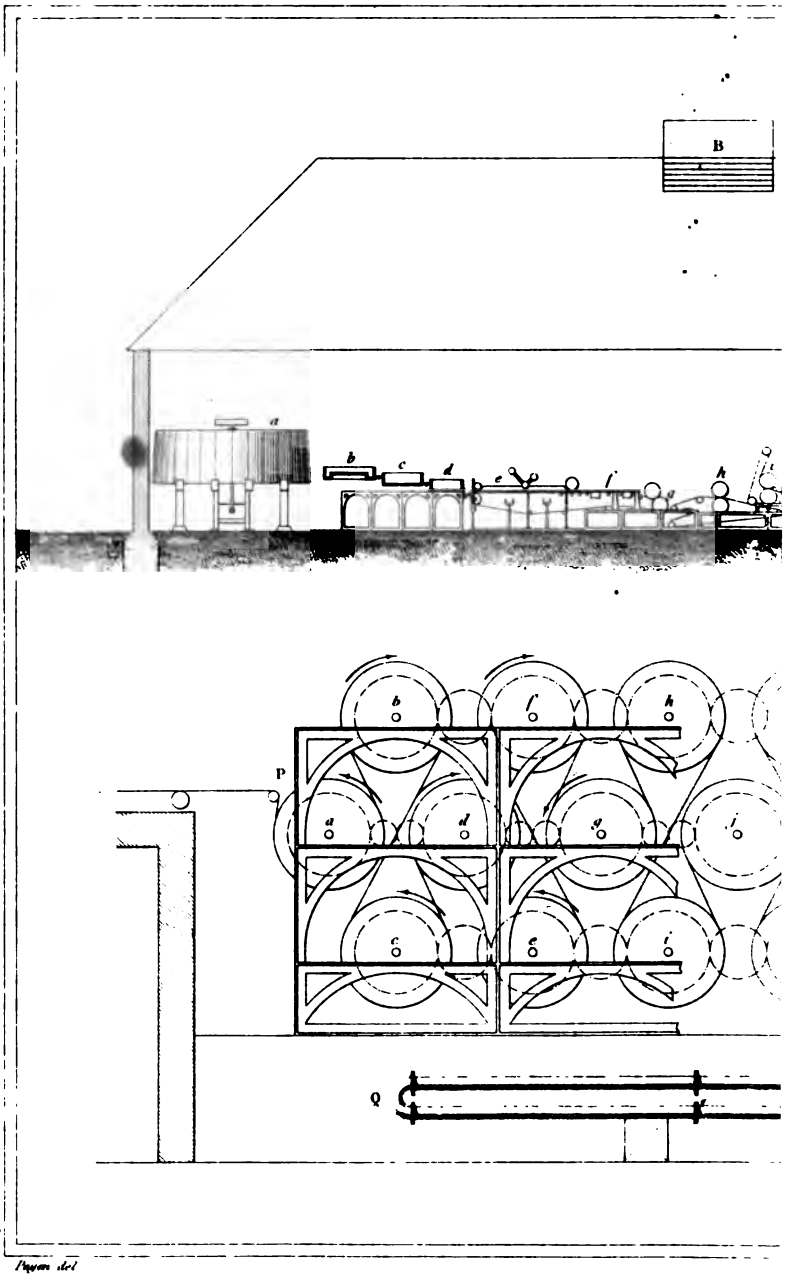
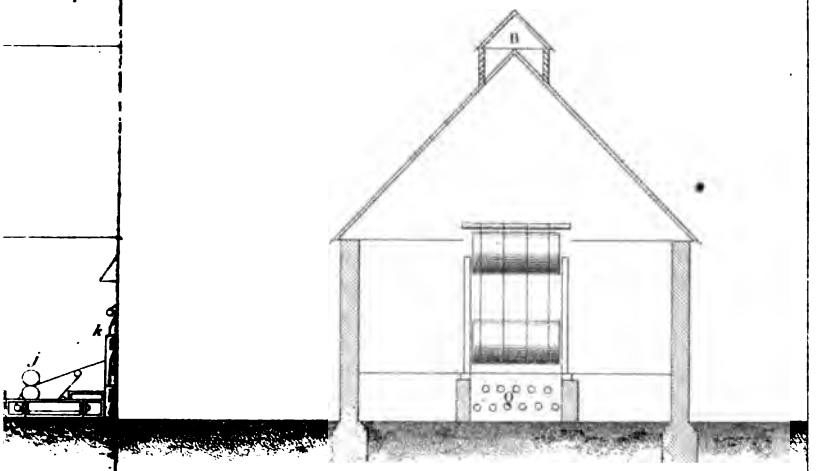

B
a
b
c
d
e
f
g
h
P
Q

Fig. 2.



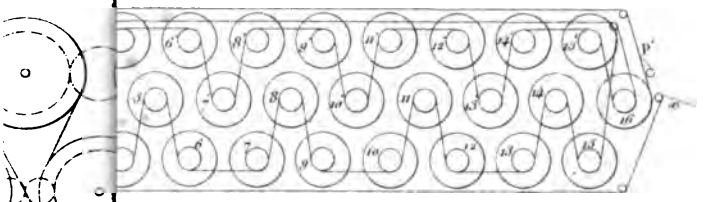


Fig. 6.

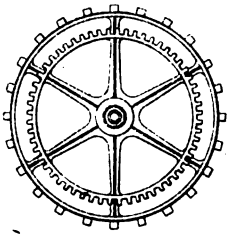
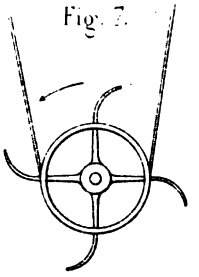


Fig. 7.



J. Pradelin et L. Chaumont

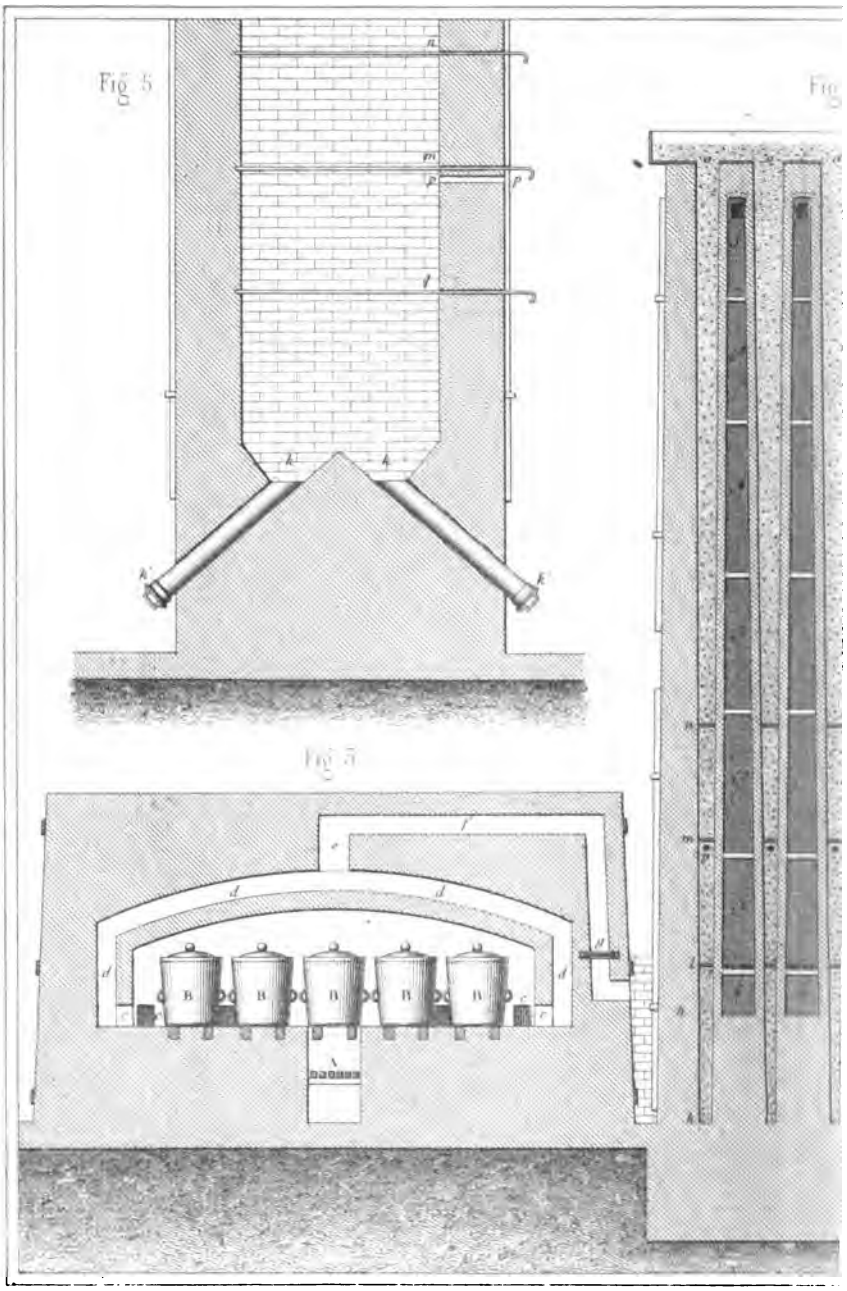


Fig 5
Fig
Fig 5
B
B
B
B
B

Fig. 1.

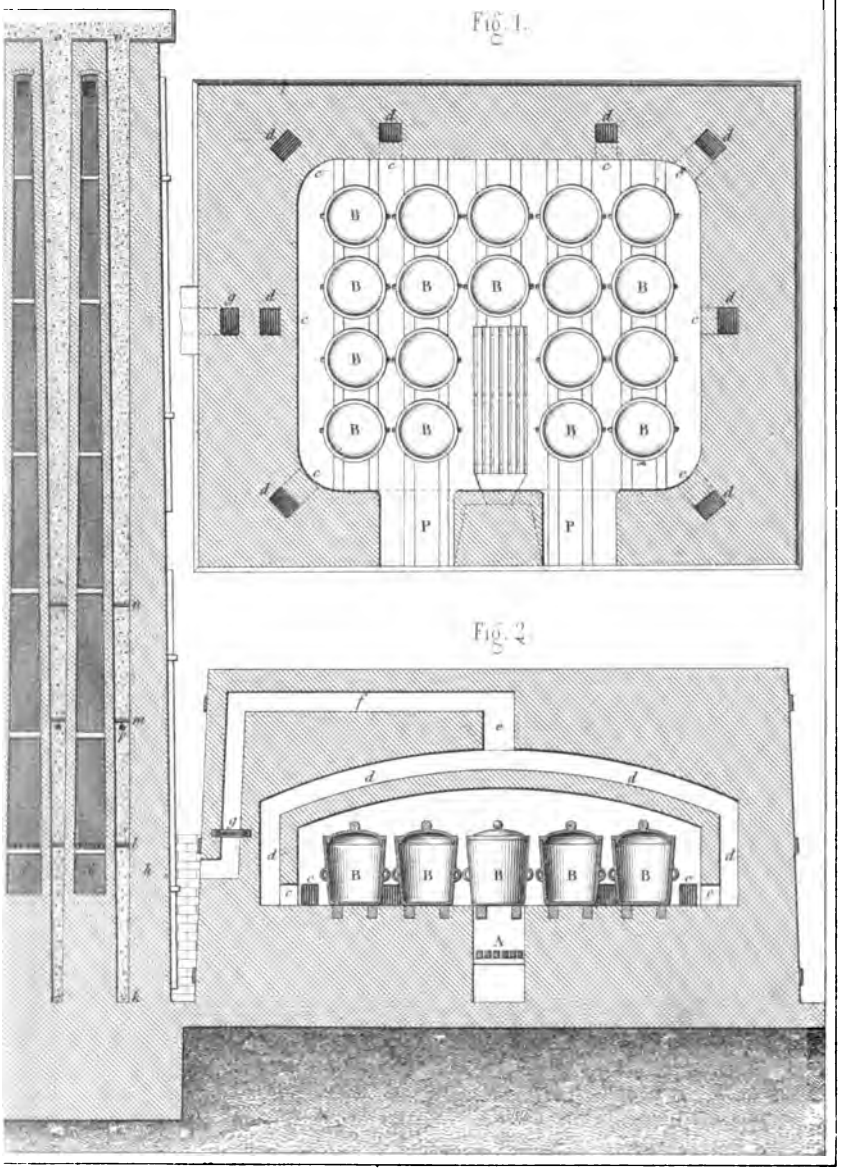


Fig. 2.

Fig. 4.

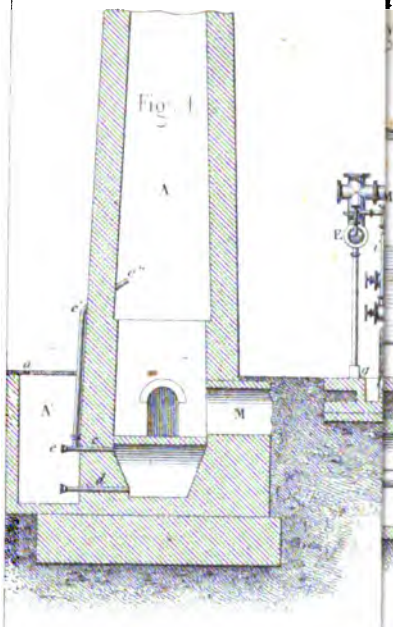


Fig. 5.

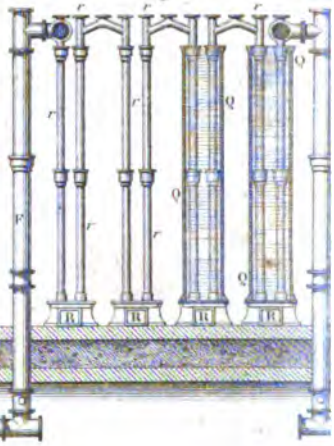


Fig. 1.

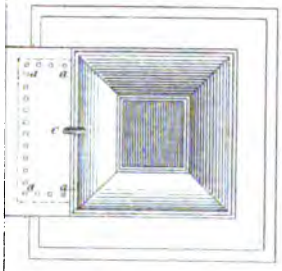


Fig. 3.

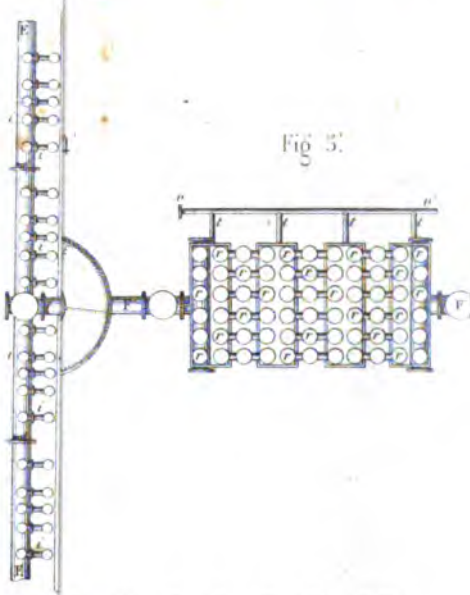


Fig. 6.

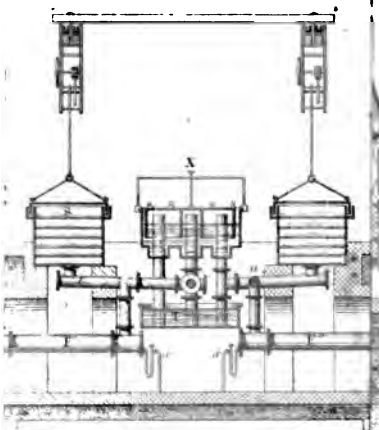


Fig. 8.

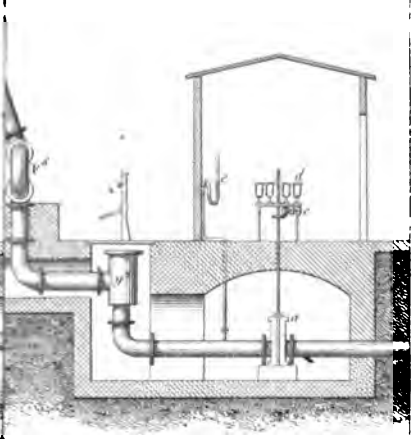


Fig. 6'.

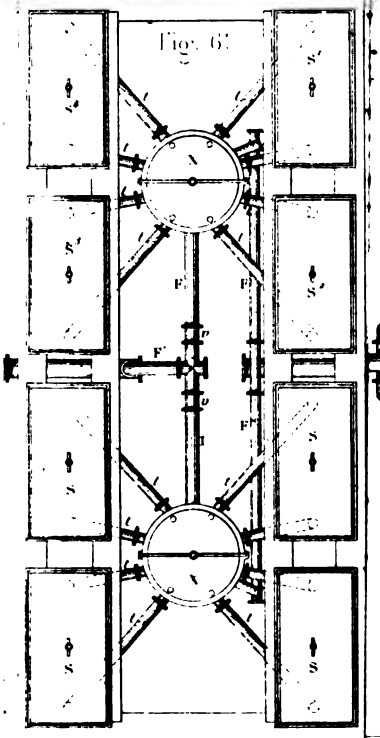
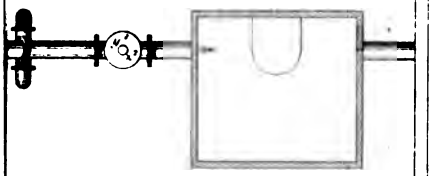


Fig. 8'.



— HACHETTE & Cie

Fig. 2.

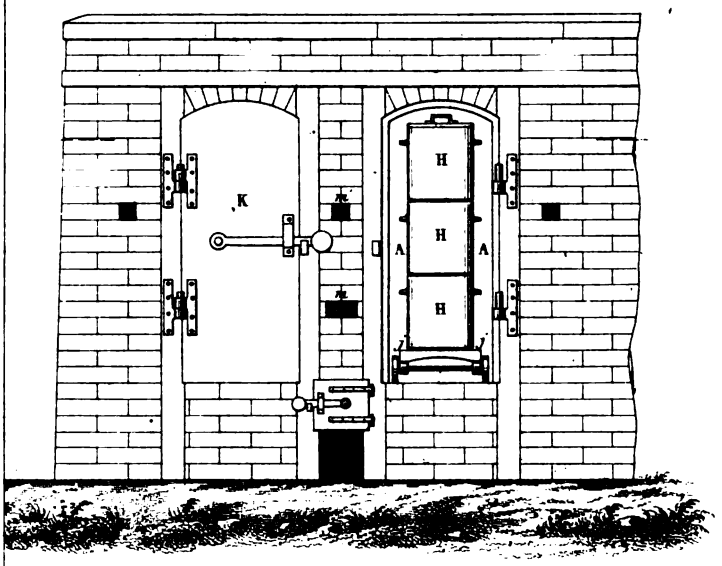


Fig. 3.

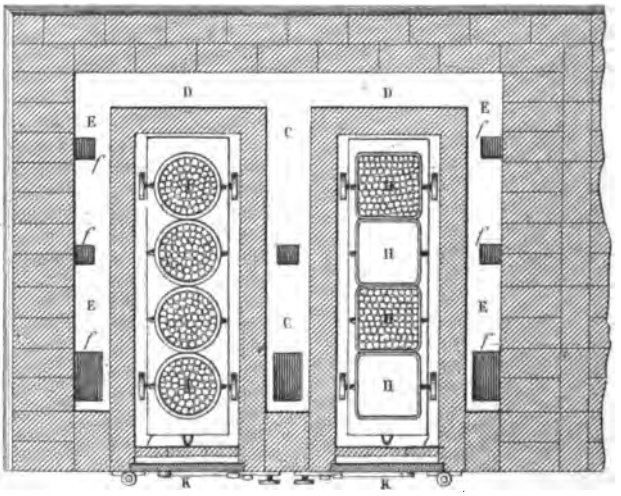


Fig. 1.

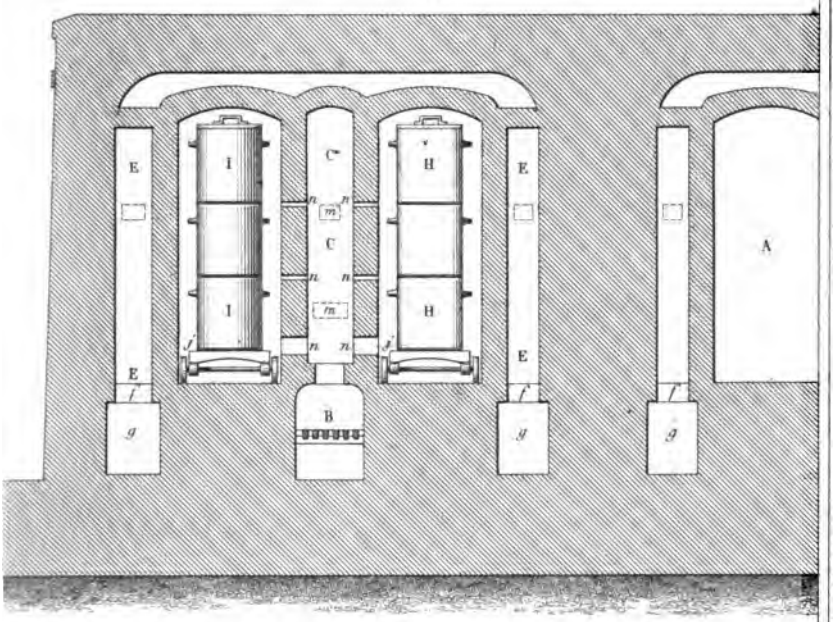


Fig. 3.

Fig. 4.

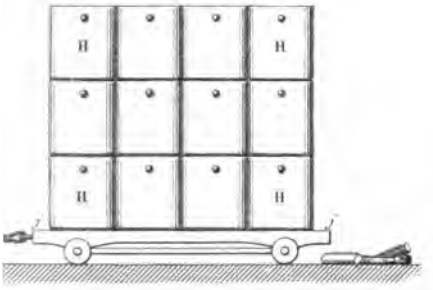


Fig. 6.

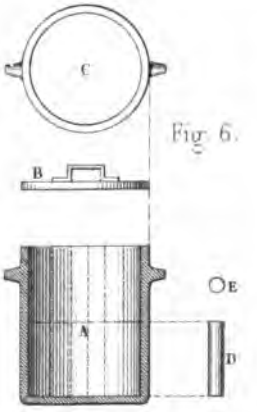


Fig. 1.

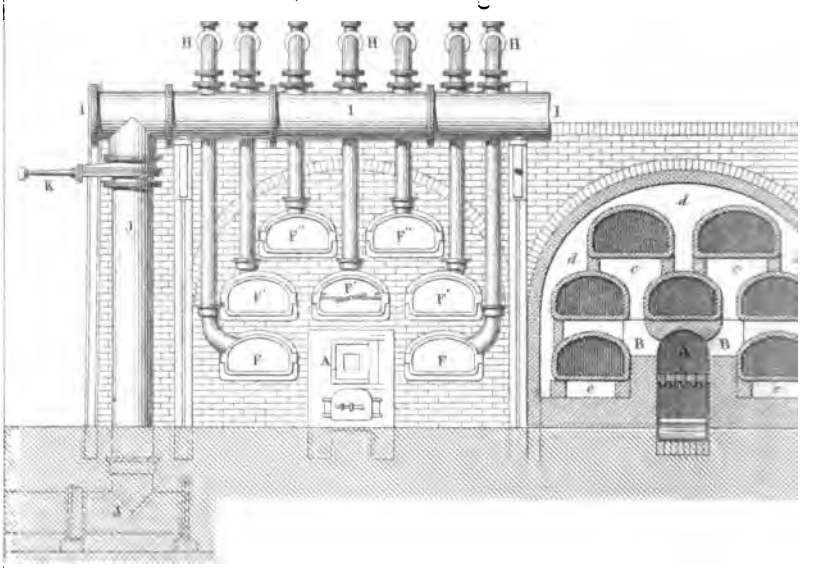


Fig. 2.

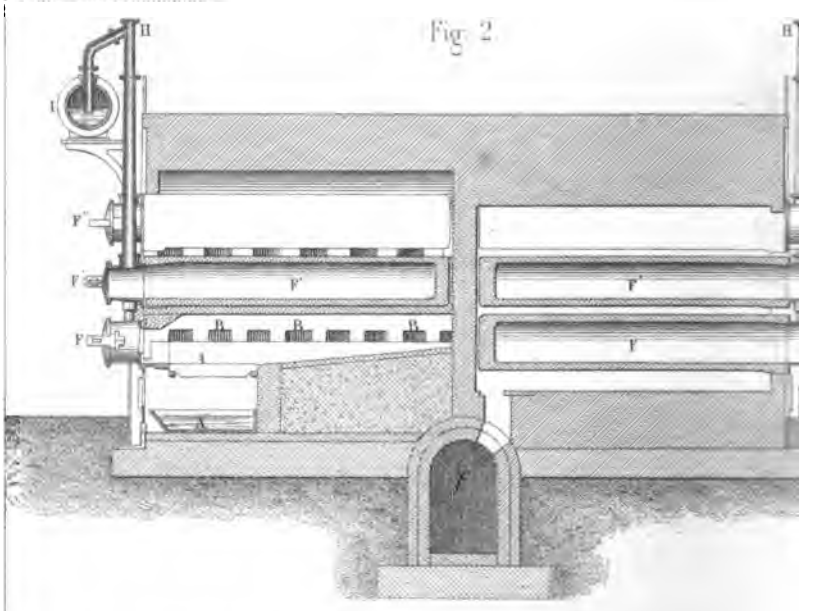


Fig 4.

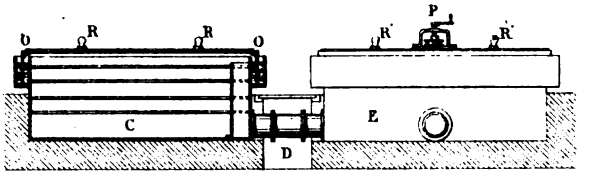


Fig. 6.

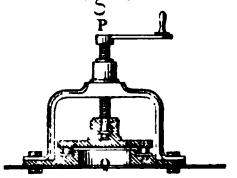


Fig. 7.

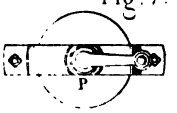


Fig. 3.

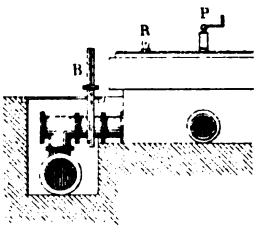
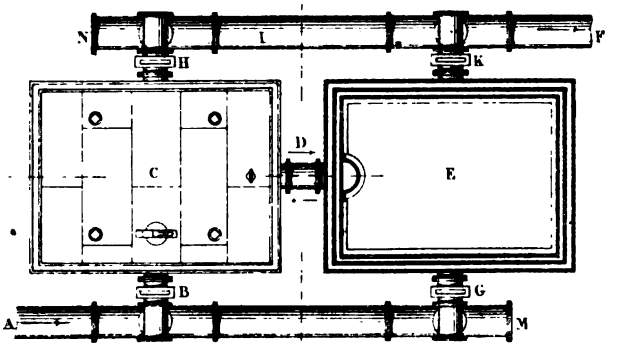
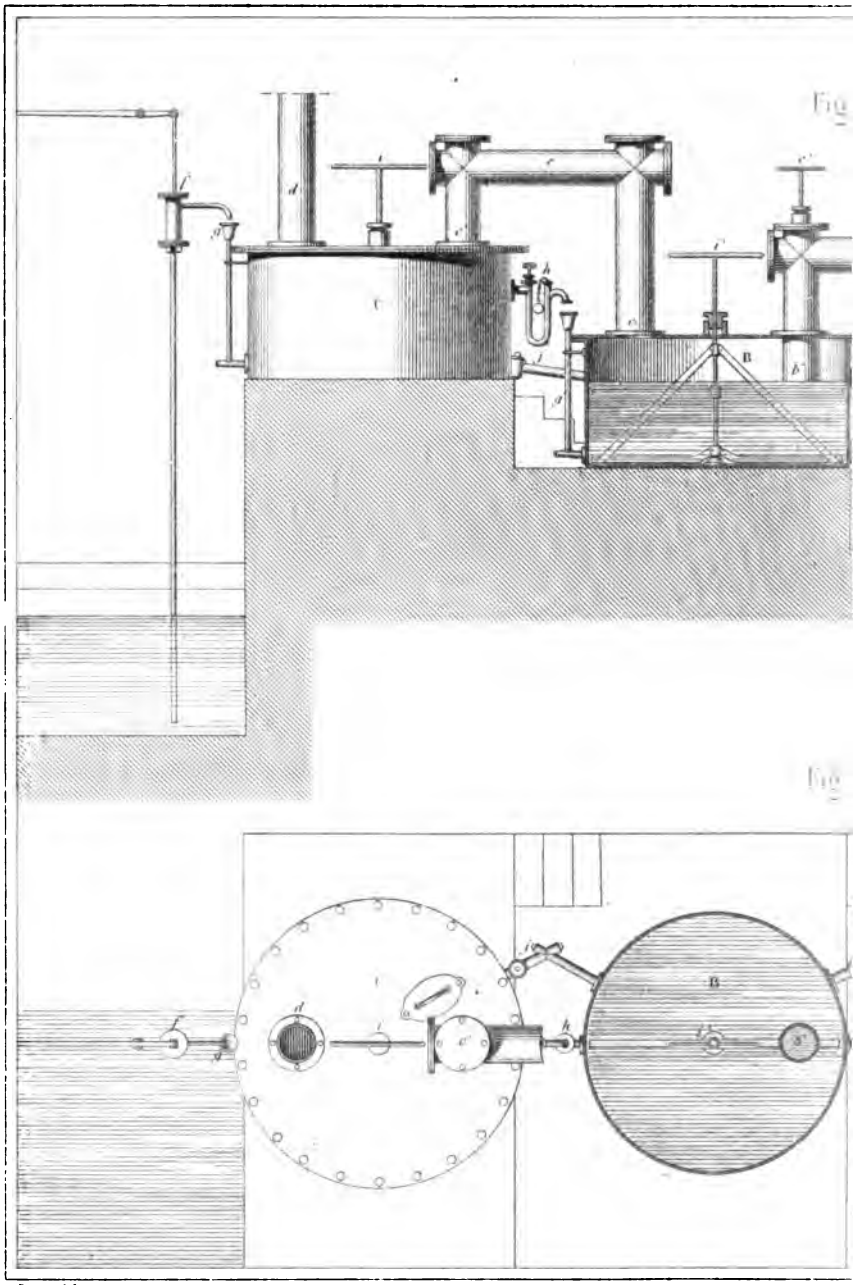


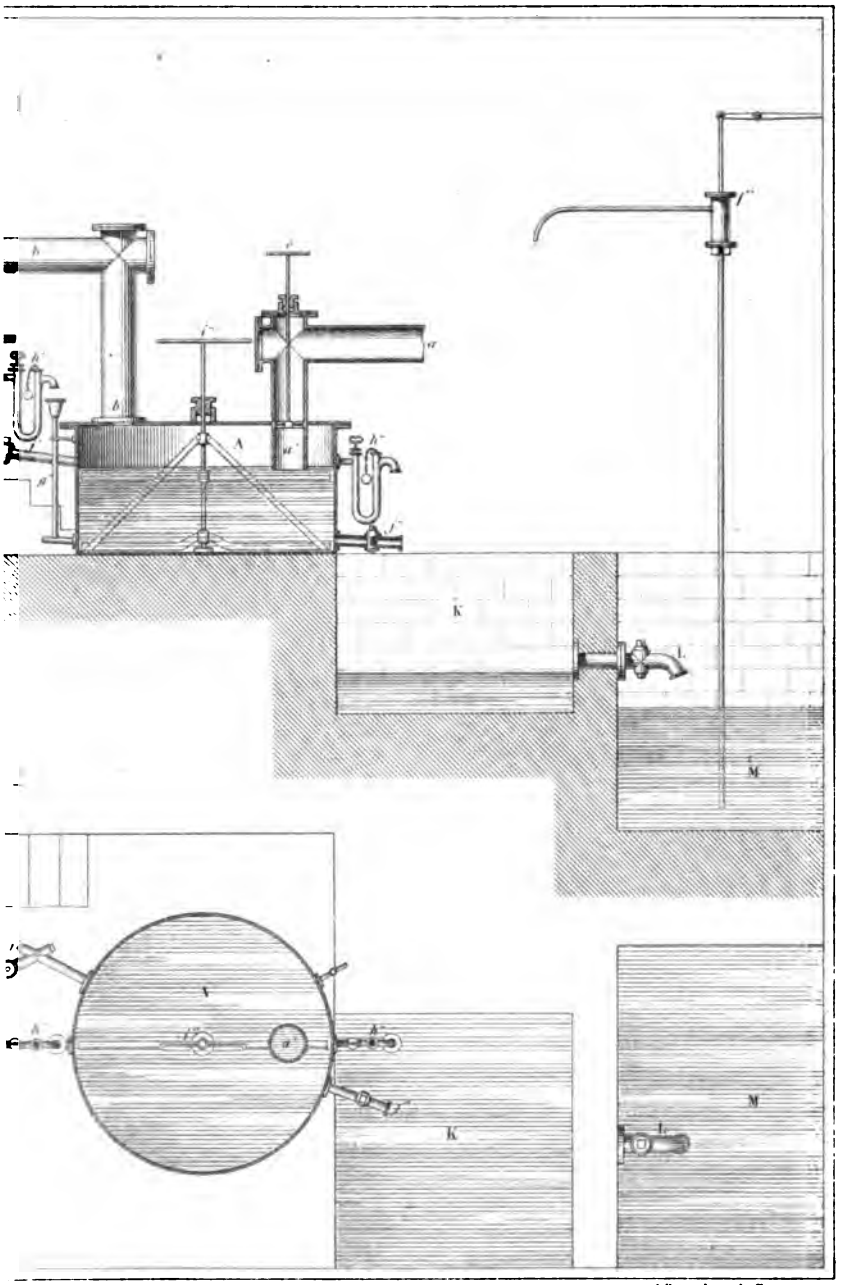
Fig. 5.



ÉPURATEUR MÉTHODIQU



Payen del



CHATTE et Cie
Petitcolin et Chaumont sc.

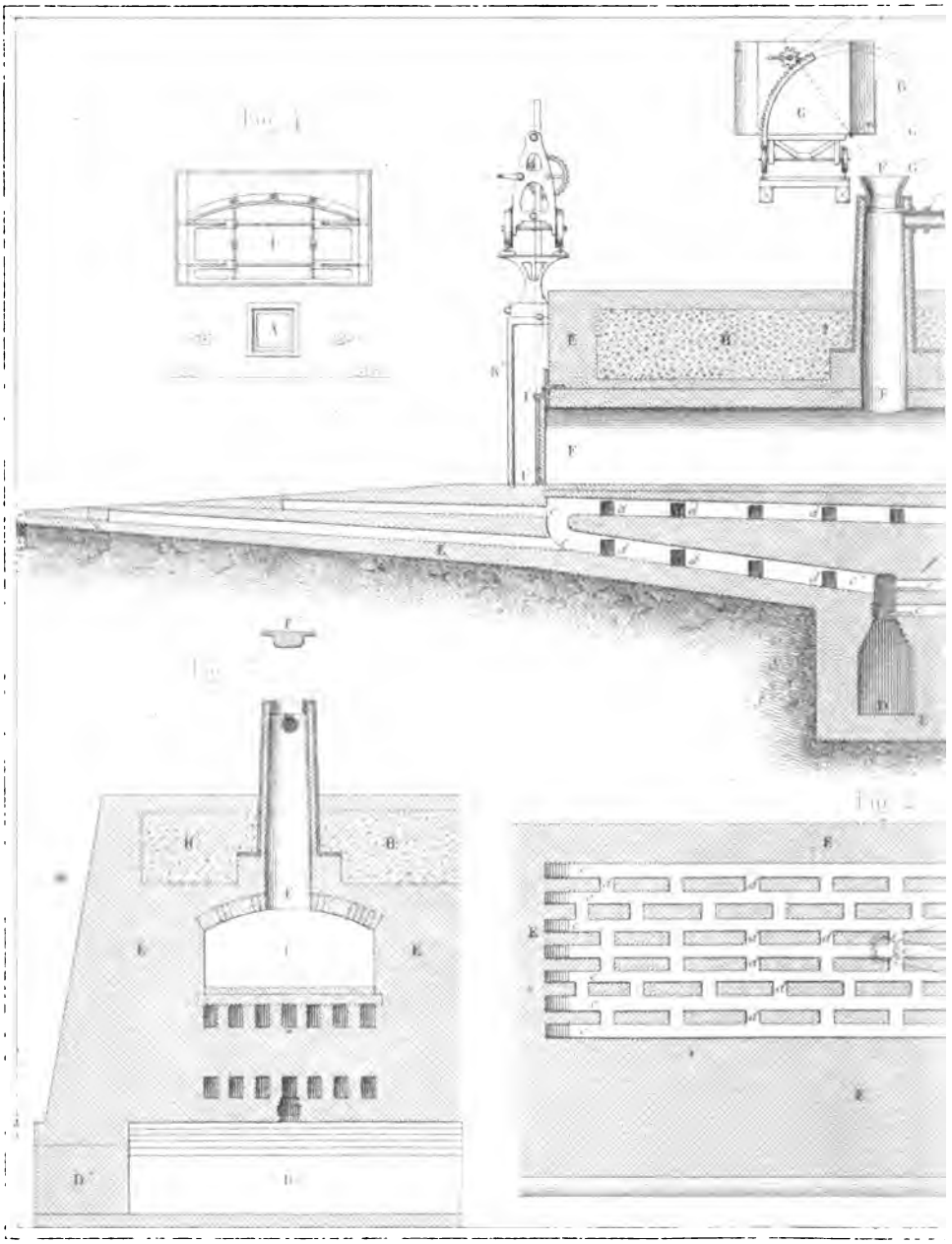


Fig. 1

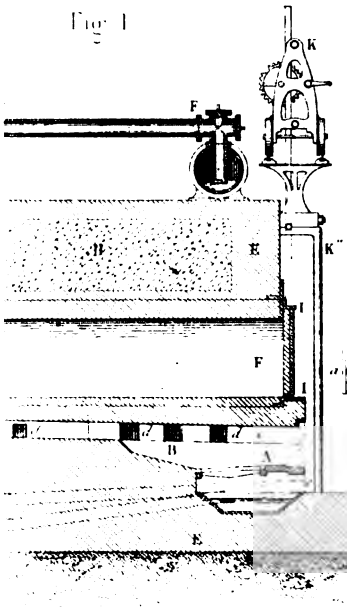


Fig. 5

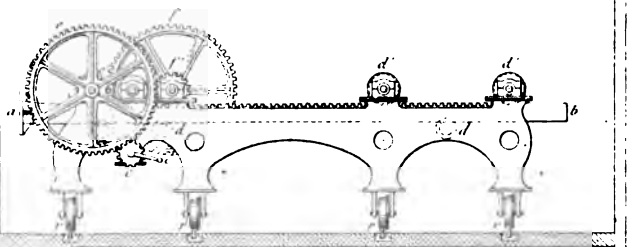


Fig. 6

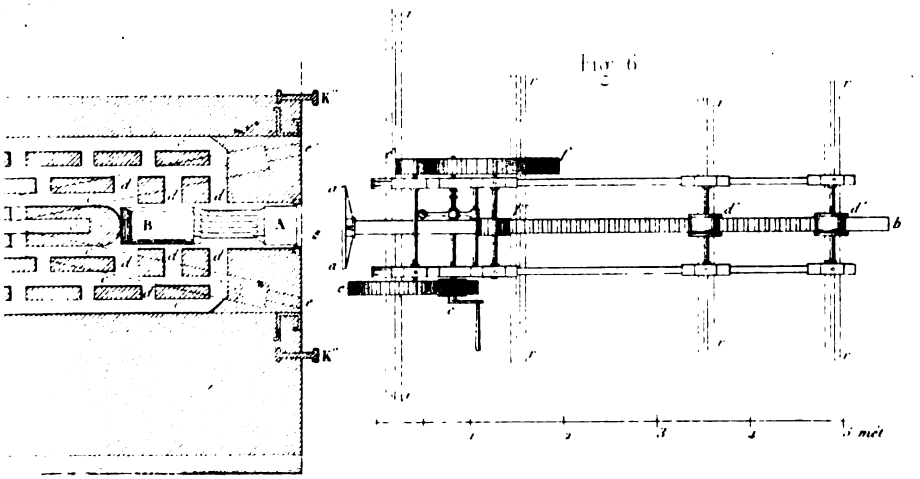


Fig. 1

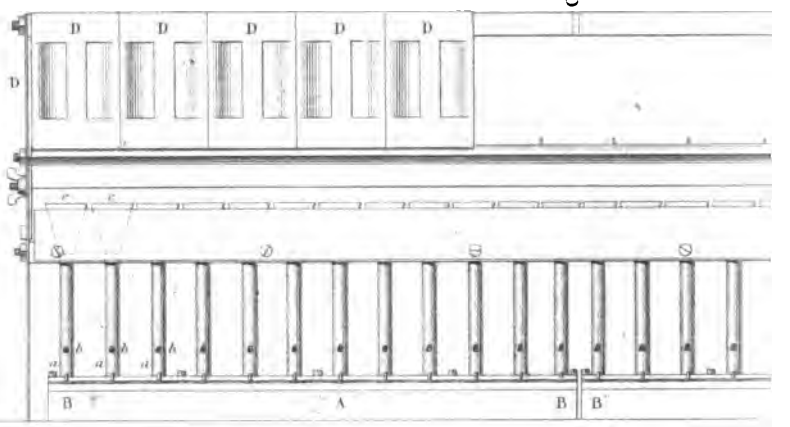


Fig. 8

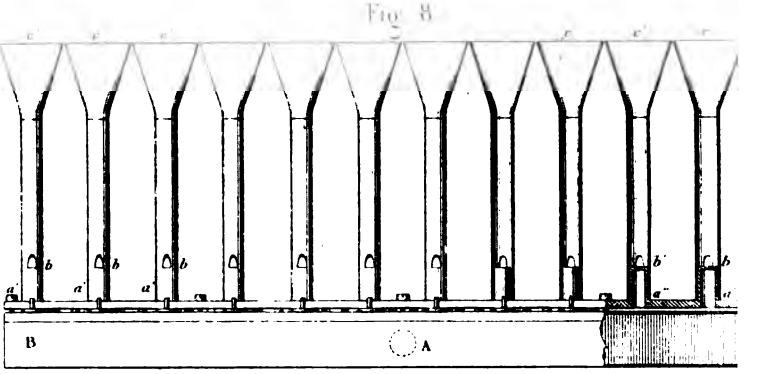


Fig. 9.

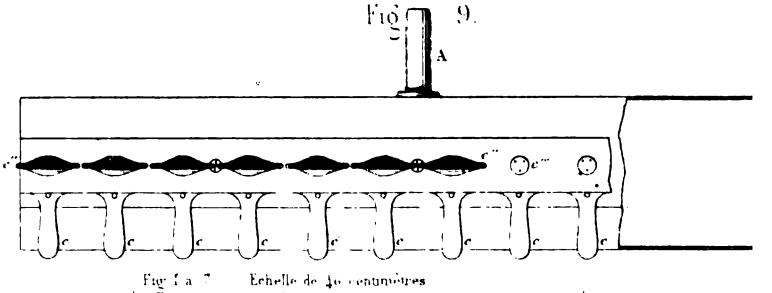
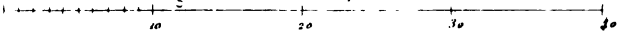
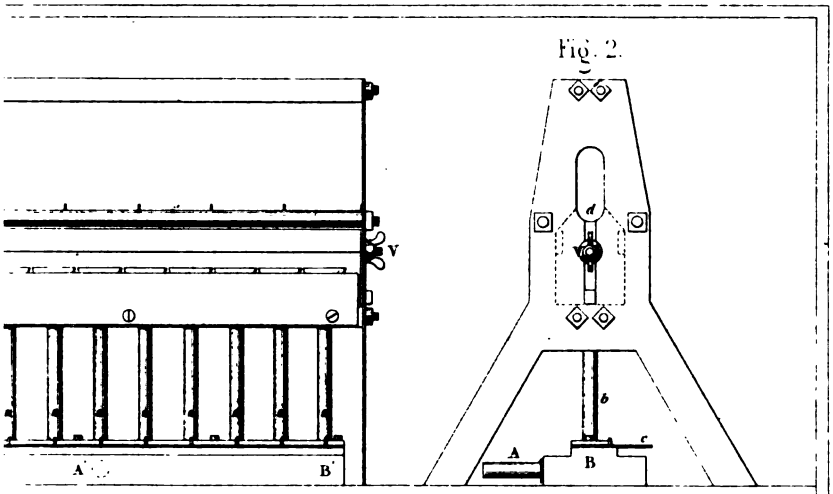


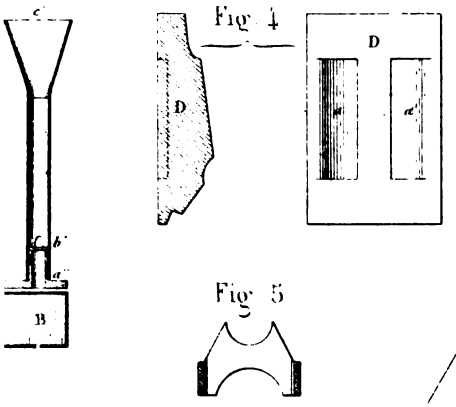
Fig. 1 a 7 Echelle de 4/10 centimètres

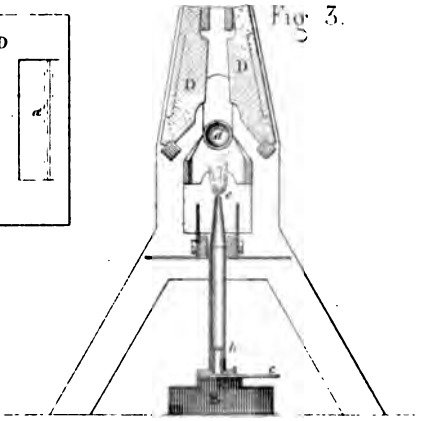


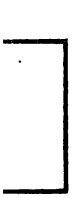
Payen del

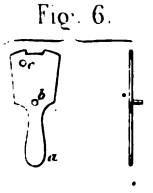
Librairie











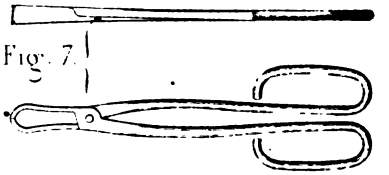
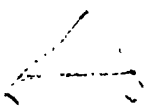
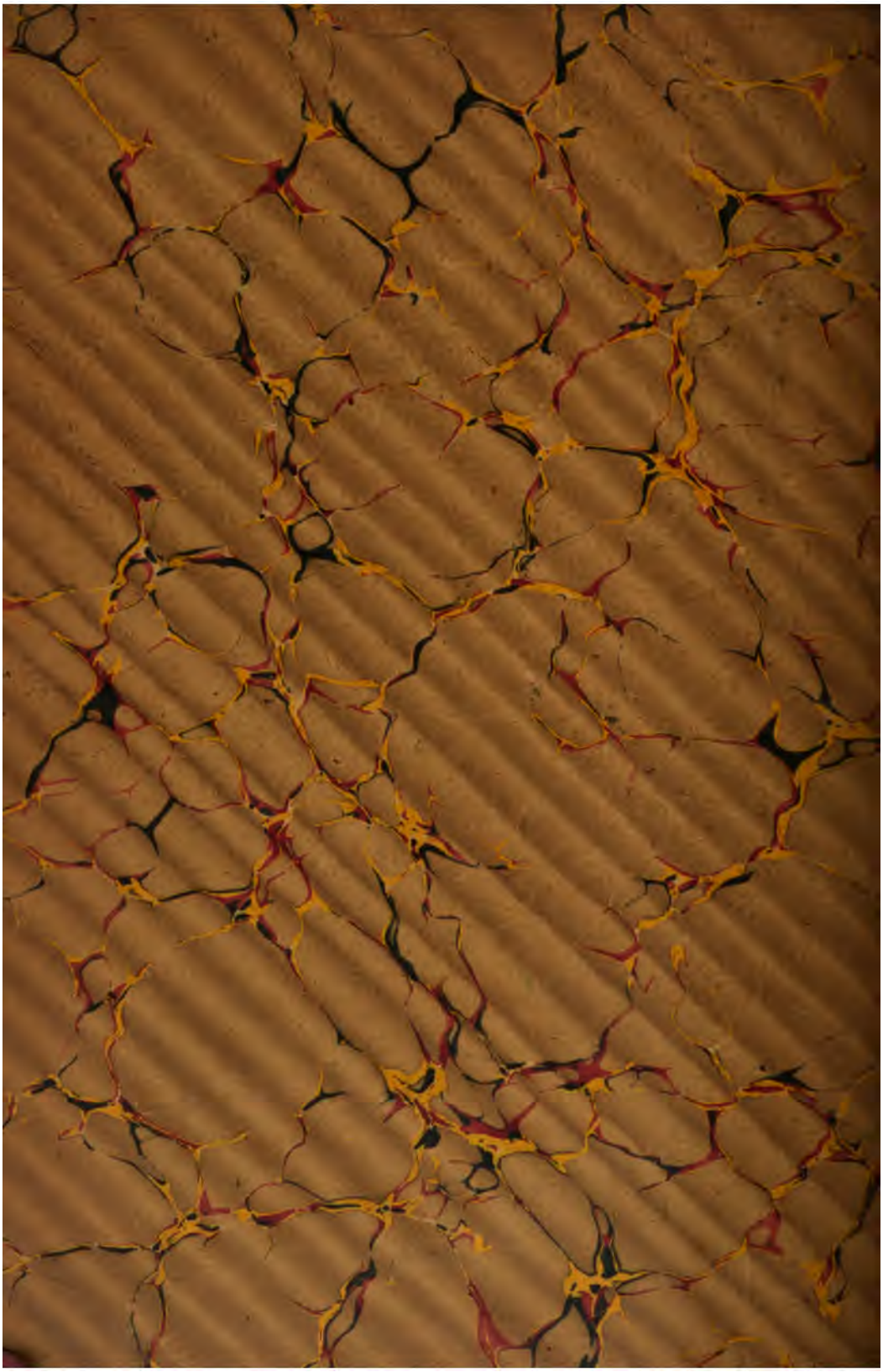


Fig. 8 et 9. Echelle de 3o centimetres

LEMERCIER et Cie J. Pranishnikoff et L. Chamouard sc





This book should be returned to the Library on or before the last date stamped below.

A fine of five cents a day is incurred by retaining it beyond the specified time.

Please return promptly.